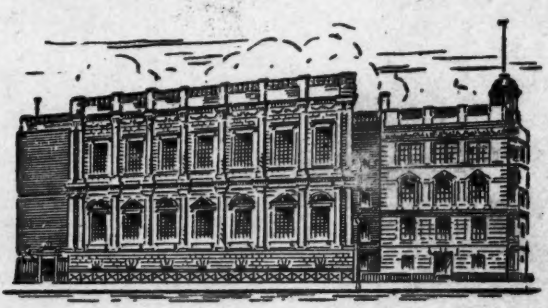
Vol. LXXIX FEBRUARY, 1934 No. 513

JOURNAL



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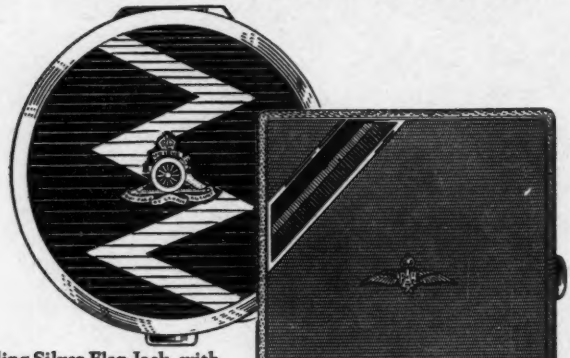

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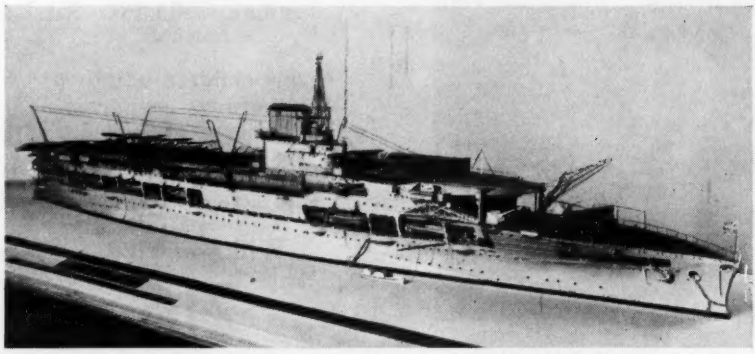

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February, 1934.

Anniversary Meeting.

The Anniversary Meeting will be held on Tuesday, 6th March, at 3.30 p.m. The Council will present their Annual Report and Accounts, and there will be an election to fill the vacancies on the Council. The Gold Medal will be presented to the winner of the 1933 Essay Competition.

Copies of the Annual Report and Accounts can be obtained in advance on application to the Secretary.

Council.

The following members of the Council, having completed three years' service, retire :—

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*Colonel C. H. Colvin, C.B., D.S.O.

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Air Vice-Marshal Sir Vyell Vyvyan, K.C.B., D.S.O.

Of the above those marked (*) have offered themselves for re-election. This leaves one vacancy each for the Royal Navy, Regular Army and Royal Air Force.

EX-OFFICIO MEMBERS.

Major-General C. C. Armitage, C.B., C.M.G., D.S.O., succeeds Major-General J. G. Dill, C.B., C.M.G., D.S.O., on taking up the appointment of Commandant of the Staff College, Camberley; and Air Vice-Marshal W. R. Freeman, C.B., D.S.O., M.C., succeeds Air Vice-Marshal P. B. Joubert de la Ferté, C.M.G., D.S.O., on taking up the appointment of Commandant of the Royal Air Force Staff College, Andover.

HONORARY MEMBERS.

The Council regret to have to record the death of General Sir A. W. Currie, G.C.M.G., K.C.B., one of their Honorary Members representing Canada.

New Members.

The following officers joined the Institution during November, December and January :—

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Lieutenant J. N. N. Synnott, R.N.
Sub-Lieutenant R. N. Gibb, R.N.
Sub-Lieutenant J. O. C. Hayes, R.N.
Midshipman T. E. F. Pooley, R.N.
Lieutenant I. F. M. Newnham, R.N.
Lieutenant-Commander J. T. S. Hall, R.I.M.
Lieutenant H. D. Fellowes, R.M.

ARMY.

Captain B. G. Allen, The Sherwood Foresters.
Brigadier-General G. Lubbock, C.M.G., D.S.O., late R.E.
Captain D. Stansby, The Norfolk Regiment.
Lieutenant H. R. Norman, Coldstream Guards.
Captain C. M. Delf, I.A.
Captain G. D. S. Adami, R.E.
W. S. Duthie, late Gordon Highlanders.
2nd Lieutenant Hon. H. D. G. Prittie, The Rifle Brigade.
Lieutenant D. S. Schreiber, 11th Hussars.
Captain C. A. R. Coghill, Scots Guards.
Captain W. D. S. Careye, The West Yorkshire Regiment.
Lieutenant-Colonel A. F. Lambert, M.C., R.A.
Lieutenant A. G. Proudlock, R.A.
Lieutenant A. J. C. Rose, Argyll & Sutherland Highlanders.
2nd Lieutenant A. V. Benton, Royal Signals.
2nd Lieutenant W. S. Bevan, The Suffolk Regiment.
2nd Lieutenant A. C. Clarke, The Middlesex Regiment (T.A.).
2nd Lieutenant E. H. M. de Muralt, The Lancashire Fusiliers.
Lieutenant-General Sir John F. S. D. Coleridge, K.C.B., D.S.O.
Lieutenant-Colonel E. J. Heilbron, late 3rd K.O.Y.L.I.
Lieutenant F. F. S. Barlow, The South Wales Borderers.
Lieutenant R. E. D. Green, The East Lancashire Regiment.
Lieutenant E. A. M. Norie, The East Yorkshire Regiment.
2nd Lieutenant J. M. Christian, King's Royal Rifle Corps.
Lieutenant C. C. Beaty-Pownall, The Leicestershire Regiment.
Captain T. L. Harris, R.A.
Colonel R. Howlett, D.S.O., M.C., late Royal Fusiliers.
Lieutenant C. M. R. Leonard, The Royal Irish Fusiliers.
2nd Lieutenant J. Harrington, R.A.
2nd Lieutenant R. H. Bright, Royal Tank Corps.
Lieutenant J. A. Lasbrey, late East Surrey Regiment.
Captain H. A. Ingledew, Northumberland Fusiliers.
2nd Lieutenant R. A. Yule, Royal Tank Corps.
Lieutenant P. D. Weir, R.A.
Lieutenant-Colonel E. W. Plummer, D.S.O., late R.A.

ROYAL AIR FORCE.

Air Vice-Marshal W R. Freeman, C.B., D.S.O., M.C.

Gold Medal Essay (Military), 1933.

The following Essays have been received :—

"Go one better."

"Nec temere, nec timide."

"Sapere Aude."

"So now we've done with idle days."

"Therefore let any Prince or state . . ."

"The proper sort shall flourish now . . ."

"If the bulwark is defective the state will be weak."

Results of the Competition.

The following is the result of the competition for the Gold Medal of the Royal United Service Institution and the Trench Gascoigne Prize :—

Gold Medal and 1st Trench Gascoigne Prize :—Brevet Major F. A. S. Clarke, D.S.O., *p.s.c.*, Essex Regiment.

Second Trench Gascoigne Prize :—Brevet Lieutenant-Colonel J. K. Dunlop, M.C., 12th London Regiment, "Rangers."

The Council have also authorised a Third Trench Gascoigne Prize in this competition, which has been awarded to Brevet Major J. K. Edwards, M.C., *p.s.c.*, Scots Guards.

The Essays sent in by Major L. A. W. B. Lachlan, *p.s.c.*, The Gloucester Regiment, and Lieutenant O. L. Jones, The Cheshire Regiment, are Honourably Mentioned.

Gold Medal Essay Subject (Naval), 1934.

The following subject has been selected :—

"To consider in all its aspects the minimum size of the Capital ship demanded by modern conditions of warfare."

A leaflet giving the rules governing this competition will be forwarded on application to the Secretary.

Lecture Cancelled.

The lecture on "The Indianization of the Indian Army" which was to have been given by Lieutenant-General Sir J. F. S. D. Coleridge, K.C.B., C.M.G., D.S.O., on Wednesday, 28th February, has been cancelled.

Additional Lecture.

A lecture on "Coal *versus* Oil for the Navy" will be given on Wednesday, 14th March, 1934, by Engineer Vice-Admiral Sir R. W. Skelton, K.C.B., G.B.E., D.S.O. Admiral of the Fleet Sir Roger Keyes, Bt., G.C.B., K.C.V.O., C.M.G., D.S.O., will take the chair.

LIBRARY

Rules Governing Return of Books.

The attention of Members is invited to the following Regulations governing the retention and return of books :—

(1) Certain books, for which there is a special demand, must not be retained longer than a fortnight after the date of receipt. A notice to this effect will be found in the book.

(2) In the United Kingdom.—Books must normally be returned within one month of the date of issue ; but the Librarian is authorised to make extensions of one month at a time on application by a Member, up to a maximum of three months from the date of issue, if the work is not required by another Member.

(3) Stations Abroad.—When books are sent to Members abroad the same rules apply as for the United Kingdom, except that " the date of receipt " is substituted for " the date of issue."

N.B.—IN VIEW OF THE INCREASING DEMAND FOR BOOKS FROM THE LENDING LIBRARY, IT IS ESSENTIAL IN THEIR OWN INTERESTS THAT MEMBERS SHOULD ADHERE STRICTLY TO THE RULES GOVERNING THE RETURN OF BOOKS. FAILURE TO DO SO IS CAUSING MUCH INCONVENIENCE, AND INVOLVING THE INSTITUTION IN UNNECESSARY EXPENSE AND CLERICAL LABOUR.

MUSEUM

Wellington Exhibition.

The Naval Polar Exhibition will be closed early in March and a Wellington Exhibition is being organized for the Easter holidays. It will comprise relics and accoutrements relating to the Great Duke, his Generals and Campaigns. In connection with this Exhibition a selection of appropriate pictures from the Crookshank Collection will be shown.

Collection of Medals.

The Institution already possesses a large and varied collection of medals, but offers of additions to the collection will be most welcome. Details of such offers should, however, be communicated to the Curator before medals are sent.

Regimental Badges and Buttons

The Institution's collection of Regimental Badges and Buttons has been re-organized and re-arranged. It is desired to complete the collection, and contributions from Members for this purpose would be very much appreciated. The Institution also has a certain number of spare badges which could be exchanged for others or sold to collectors.

Additions.

(8641) Cap badge and buttons of the Transjordan Frontier Force.—Presented by Captain J. M. Sinclair.

(8642) One dollar note issued by the Army Bill Office, Quebec, in 1814, during the Canadian war with America.—Presented by Colonel J. Y. H. Ridout.

(8643) French Artillery sword, Napoleonic period, and French rapier.—Presented by Miss R. Baines.

(8644) Afghan medals for gallantry and general service, awarded by King Amanullah to troops who fought in the 3rd Afghan War, 1919.—Presented by Colonel Sir Armine Dew.

(8645) Shoulder belt badge of the South Bucks Volunteers, 1800.—Presented by Lieutenant-Colonel Bennett-Stanford.

(8646) Candles taken by Captain Parry on his Arctic Expedition, 1825.—Presented by Mrs. W. A. MacLeod.

(8647) Helmet of the Inns of Court Regiment, 1900.—Presented by the Officers of the Regiment.

(8648) Victory medals of the United States, Japan, Italy, Roumania, Greece, Portugal and Cuba; Serbian War medal for the Great War 1914–18.—Presented by Colonel E. L. Hughes.

(8649) Long Service and Good Conduct medal, and Meritorious Service medal awarded to Sergeant F. Thatcher, R.A.—Bequeathed by Sergeant F. Thatcher.

(8650) Gold medal presented by Sir Eyre Coote to Joseph Finch for valour at the battle of Sholengarh, 1781, when he rode alone into the enemy ranks and captured a standard.—Presented by J. & E. Finch, Esqrs.

(8651) Commemorative medallion of Napoleon I; three German Crosses for the years 1813–14, 1830–31 and 1866.—Presented by the Rev. E. Dorling in memory of Colonel L. Dorling.

(8652) Helmet of the Household Cavalry of Said Pasha, Viceroy of Egypt, 1854–63, and H.H. Ismail Pasha, Khedive of Egypt, 1863–79.—Presented by Lieutenant-Colonel H. Castle-Smith.

(8653) Detailed plan of the Royal Palace of Whitehall from a survey taken in 1680; engravings of the Holbein Gate and of King Street Gate, Westminster.—Presented by W. H. Fox, Esq.

(8469) Working model of a B.L. 6 in. 26 cwt. Howitzer on travelling carriage, with limber; for attachment to the artillery dragon previously presented.—Made and presented by the Military College of Science, Woolwich.

LOAN.

(3600) Coat which belonged to Joseph Bonapart, King of Spain.—Lent by Mrs. F. K. Scott.

(3602) Thirty military head-dresses.—Lent by E. W. Stephens, Esq.

Attendance.

The amount taken for admission during the past quarter was :—

£112 8s. 6d. in November.
£81 os. 6d. in December.
£123 11s. 6d. in January.

Purchase Fund.

This Fund has been opened to assist in the purchase of new exhibits. The Council hope that it will receive the support of Members interested in the Museum.

From the photograph by H. G. Ponting. *By courtesy of The Scott Polar Research Institute, Cambridge*

SCOTT'S "TERRA NOVA"

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BRITISH POLAR EXPEDITIONS

By ADMIRAL SIR WILLIAM GOODENOUGH, G.C.B., M.V.O.

On Wednesday, 3rd January, 1934.

ADMIRAL SIR R. G. O. TUPPER, G.B.E., K.C.B., C.V.O., in the Chair.

THE CHAIRMAN, in introducing the Lecturer, recalled his very distinguished services in the War, and remarked that for the past three years he had been President of the Royal Geographical Society.

LECTURE.[1]

IT will not be out of place to begin by quoting the greatest of all Polar explorers, Fridjof Nansen, who when asked why men returned to the cold and hardships of the Polar regions, replied in the words of the old Norse chronicle, *The King's Mirror*: "If you wish to know what men seek in this land, or why men journey thither in so great danger of their lives, then it is the threefold nature of man that draws him thither. One part of him is emulation and desire of fame, for it is a man's nature to go where there is a likelihood of great danger and to make himself famous thereby. Another part is the desire of knowledge, for it is a man's nature to wish to know and see those parts of which he has heard, and to find out whether they are as it was told him or not. The third part is the desire of gain, seeing that men seek after riches in every place where they learn that profit is to be had, even though there is great danger in it."

[1] Admiral Goodenough prefaced his lecture by stating that he was giving it in connection with the Naval Polar Exhibition which was being held in the Museum. His remarks would be the result of study and not of personal experience. The lecture was illustrated by numerous lantern slides.

Nansen himself puts it more tersely yet scarcely less impressively. "From first to last the history of Polar exploration is a single mighty manifestation of the power of the unknown over the mind of man."

Yet it was none of these things, but the desire to spread the Christian faith which impelled an Irish priest to undertake what may be regarded as the first Arctic expedition. Over 1,000 years ago, St. Brandon, as he was afterwards called—strong in faith if little skilled in navigation—sailed from Ireland for Iceland.

After the Irish priest many centuries passed, and those other reasons Nansen quoted began to induce men to go North. I can only mention these men and their adventures very briefly, and then I must turn to more modern achievements.

Sebastian Cabot's search to the West made known to the world the great cod banks and fishing grounds.

Chancellor, in 1533, sought to discover a route to China by the North Cape; just as it was hoped to find a way to Cathay by going to the West. His object, like those of many of his successors, was, of course, to establish a passage which would avoid the long and hazardous journeys round the Cape of Good Hope and Cape Horn. Although he failed in that endeavour, he established sea trade with Russia, via a northern route.

Martin Frobisher set out to seek the North-West passage in 1576; he thought he had found a strait, but it proved to be only a bay in Baffin Land.

Then came John Davis who, in 1586, defined Greenland and explored what is now known as Davis Strait.

Twenty-five years later we have Henry Hudson, the servant of the Muscovy Company, which had been formed after Chancellor's adventure. Hudson, too, sought the passage to the North-West. He got as far as 80° North, where he was stopped by ice between Spitzbergen and Greenland. Turning West he pushed into Davis Strait, entered the Bay, which is now called after him, and was there cast adrift by his mutinous crew and perished with a few men who had remained loyal to him and his young son.

Nelson, as a Midshipman, went to the Arctic.

Coming to the last century we find that great scientific student, William Scorsby, exploring the North-East coast of Greenland; he got as far North as 81° 30′.

It would be absurd to attempt within the scope of one lecture to give a description of these men and their work. I mention them in the hope that it will inspire some of you to read about their expeditions.

I come now to events which are only just before our own time and memory. To the eternal credit of his Office, Sir John Barrow, Secretary of the Admiralty, one of the founders of the Royal Geographical Society, patron and supporter of all adventure that had to do with the sea, persuaded the Government in 1818 to offer a prize of £20,000 to the first man making the North-West passage, and another £5,000 to anyone who reached a latitude of 89°. The Board of Admiralty of the day realized the value of these expeditions for promoting independence and strength of character in peace-time, and they gave them every encouragement by providing both ships and men. Such splendid officers as the two Ross's (uncle and nephew), Parry, Franklin and George Back, threw their whole souls into the work; and where the Navy led others followed.

It is a matter of great satisfaction to know that the present Board of Admiralty also regard work of this sort with sympathy, and not as something outside the scope of naval interests.

In 1831 James Ross, nephew of Sir John, reached the North Magnetic Pole.

In 1845 Sir John Barrow persuaded the Government to try once more for the North-West passage, and the command of an expedition was offered to Ross, who was forty-five years of age. But he declared he was too old. However, Franklin—perhaps because he wished to recover some of the prestige which had formerly been his, but which he had lost by an unsuccessful Colonial Governorship—applied for the appointment, and despite Barrow's objection that he was sixty, he obtained it. He sailed, and was not heard of again until the year 1859, when an expedition, financed from funds raised by Lady Franklin, brought back a document describing his death. Here again the Navy was to the front, for that expedition was commanded by Captain Sir Leopold MacLintock, R.N. Incidentally, it may be of interest in view of the importance attached in these days to mechanical knowledge, to recall that MacLintock personally directed the dismantling of the engines of his ship during the winter in the Arctic, and subsequently re-assembled them.

The most recent Government expedition to the Arctic was that of Sir George Nares with the ships "Alert" and "Discovery" in 1875. There had been many earlier pioneers in the search for new lands and seas, but this was really the beginning of what may be called purely scientific North Polar exploration. Although it may be thought, now, that they did not achieve very much, yet it should be realized it was on account of their experience that other expeditions have been able to do so much more. They were to go to Disco on the West coast of

Greenland, pass up Smith Sound and get as far North with the ships as possible, and then winter. The main object of the expedition was to reach the North Pole. The orders issued were a model for those times. In these days they might be considered to be too detailed, but while they were clear, they left great latitude to the leaders, and the objective was plainly stated. The Royal Geographical Society, under the presidency of Sir Roderick Murchinson, gave the expedition every encouragement and assistance.

The "Alert" and "Discovery" left Portsmouth in May, 1875, equipped for three years. They took fifty-five dogs with them.

The "Discovery" wintered in 81° 45′ N. and the "Alert" in 82° 30′ N. In April a party started to the North under Commander Albert Markham, R.N., cousin of that Sir Clements Markham who had served on one of the Franklin search expeditions, and who, fifty years later, as President of the Royal Geographical Society, was one of the chief promoters of the 1901-04 Scott Expedition. Among other things they took with them two boats on sledges, for they knew that the ice was liable to crack and to form lanes in the summer; but these in addition to heavy loads of stores proved far too burdensome, and the boats were abandoned. The party reached 83° 20″, the highest latitude ever attained up to that date. Lieutenant Pelham Aldich, R.N., in command of another party, explored about 220 miles of the coastline to the westward. Eventually scurvy compelled Captain Nares to return, and he reached England in November, 1876, having gained very valuable experience.

I come, next, to a very different enterprise, one which is fresh in the minds of many here, and that is Gino Watkins' expedition to Greenland three years ago. Here was something quite new. The object was to survey and map the country, and to take meteorological observations, with a view to determining the possibility and desirability of developing an air route from this country to Canada and the United States across Greenland: the shortest distance to Canada, it will be noted, is via Scotland to Iceland, Greenland, Baffin Land and Churchill.

Watkins, at the age of three and twenty, came to the leadership of this expedition a veteran. Before he was one and twenty he had led an expedition of men far older than himself to Spitzbergen. Then, accompanied by James Scott, he spent a full year in Labrador in perfecting his knowledge and technique of travelling, surveying and mapping. He was original in thought, clear in mind, a pattern of what an explorer should be.

The expedition was based on the East coast of Greenland, from where it proceeded to do all preliminary exploration. The coast was mapped as

far North and South of the base as possible. There were three sledge journeys on the inland ice—Northwards as far as they could get; Southwards to Ivigtut; and a third, across the Ice Cap, to the West coast. Incidentally, it is worth noting that Greenland used to be regarded as a very mountainous country, covered with ice; but that, in all probability, this is not so. There are mountains on the East coast and hills on the West coast, but the great dome, which covers Greenland in the centre from North to South and from coast to coast, is not an ice cap, but all ice, with a thickness in the centre of anything from 6,000 to 8,000 feet. We have now got an instrument, which we hope to perfect, by which we shall be able to measure the thickness of ice. It works on the same principle as echo-sounding. From geological and other points of view this is of great importance.

In addition to mapping, Watkins' expedition carried out continuous weather observations in order to determine the possibility of maintaining a landing ground and of establishing and keeping supplied a weather station on the summit of the inland ice. Valuable experience was also gained regarding the best rations for polar travel and what were the necessary vitamins to enable a man to live indefinitely without fresh food. The tents used embodied improvements with which James Scott had much to do. It is of interest to know that a similar tent was taken on the Mount Everest Expedition, and proved to be invaluable.

During the eighteen months the expedition was away a survey was made up to two hundred and forty miles North of the base, including geology and bird life; a southern journey of three hundred miles; a journey of three hundred and sixty miles to Mount Forel, which was climbed to within five hundred feet of its summit; a journey South-West of three hundred miles to Ivigtut; another of four hundred and fifty miles, right across Greenland to the West coast, carrying kayaks; and a coastal voyage of five hundred and fifty miles to Julianahaab, using a motor boat with a 4 h.p. motor and kayaks. In addition, about five journeys were made to the Ice Cap station and back, each being about two hundred and sixty miles. Then there was that very remarkable achievement by Mr. Courtauld, who spent a whole winter alone on the Ice Cap.

Watkins returned to Greenland in 1932, and there, as you know, he met his death. We have examined the circumstances of that tragedy with every possible care, and, so far as we can tell—although there is no direct evidence—he may have landed from his kayak on an ice floe in order to get a better view of a seal, when suddenly a breach in the glacier ice occurred which pushed the kayak off the ice floe, and Watkins probably jumped into the water to get back into the canoe, but the cold brought

on a heart attack. You may remember the story of how Nansen, who was immensely strong, once got into the water. Johannsen hauled him back into the kayak, but it took over an hour to get any sort of life back into him.

Now let us turn to the Antarctic. The Antarctic is very different from the Arctic. To begin with, the Antarctic is a high and mountainous continent, whereas the Arctic is a sea. The temperatures are not so very much lower than in the Arctic, but the low temperature lasts much longer. In the Arctic there are bears, walrus, seals, birds and fish ; but South of the Great Barrier there is no life, no leaf, no root, no flower, no animals—nothing. An experienced explorer can live, like the Eskimos, almost entirely on what he finds in the Arctic ; in the Antarctic he must carry everything with him. Men only have trod that inhospitable land—and few enough of them.

First, I propose to tell you something of the voyage of Shackleton in the " Endurance."[1] In the Antarctic a shipwreck is, fortunately, a rare thing, although it is true that, in recent years, the number of whalers lost has increased, perhaps because wooden hulls are no longer a working proposition. But among exploring vessels the wreck of the " Endurance" in 1915 stands out as an exception to the general good fortune which has followed such enterprises. It was remarkable, too, because it showed of what British explorers are capable when faced with great emergencies.

The trials of those in the " Endurance " were long and various, and their adventures almost without parallel in polar history. Early in 1915 a landfall had been made on the North coast of Coats Land. This was mapped southwards for over a hundred miles, care being taken to follow the edge of the land as closely as possible. On 18th January, however, the ship was forced some distance from the land in order to avoid heavy pack-ice. North-easterly winds freshened to a gale and she was driven far South towards the head of the Weddell Sea. But the movements of the ice depended on the strength and direction of the wind, and by the end of nine months the " Endurance " had been carried by the drift over six hundred miles to the North again. Spring was approaching, and there seemed no reason why she should not soon be free. Unfortunately, the surrounding pack commenced to crack and partially to open, and early in October, 1915, her position had changed. More than once she rose under the increasing pressure, but in the end, on 24th October, she was caught between three floes, failed to rise, and a few days later was crushed in and sank.

There had been time to prepare for the disaster, and the equipment saved from the ship included three of the boats, five tents, sleeping

[1] The Lecturer is indebted to Dr. J. Wordie for this account.

bags and about two months' food. But twenty-eight men were faced with the position of being stranded on an ice floe more than three hundred miles from the nearest land where they could hope to be sighted. No-one knew the size of the floe or how it would move. Ultimately they would, probably, reach the open sea, but at what place or season no one could say. In this emergency Shackleton decided that a sledge journey westwards towards Graham Land must at least be attempted. Two efforts were made; one early in November and one in January, but both failed. Sledging gave no hope of success, and the only alternative was to hold to the pack until it should break up on the open sea. The first months of 1916 passed and still there was no change, except that the snow disappeared and gave place to ice extending in every direction. A faint swell was noticed on one occasion, but it was not repeated till four weeks later. Some felt that sledging might succeed if the boats were abandoned, later the same men were anxious to launch the boats prematurely; but Shackleton kept his crew together, and in the end won their approval for every single decision. On 9th April the pack scattered and three boats were launched. After five months on the pack it had come to mean security, and to leave it was to face unknown risks. The events of the next few days followed each other very rapidly. Currents made navigation difficult and the floes were beginning to break without warning. On the third night everybody crowded into the boats, which were surrounded by whales, while land winds smothered them with an oily vapour. Then followed a day of sunshine, when seals were seen basking in countless numbers on every floe. Early in April large pools were met with, and then, at last, open water. By 14th April, Elephant Island was well in sight, and it was hoped to reach it by the evening; but a great gale rose, and try as they would, the night still had to be spent in the boats. The next morning fortune favoured them, and they were able to make a landing a little to the South of Cape Valentine. It was an amazing piece of fortune, for beyond Cape Valentine was the open sea, and in a few hours they would have been beyond the Cape incapable of getting back to windward and their last chance would have been gone.

Shackleton's next decision was a particularly fine one, and showed his indomitable character. It would have been easy to have postponed any further activity after such prolonged trials; yet he made immediate preparations for a voyage of eight hundred miles in an open boat to the nearest main land. The journey offered only a slender chance of success, and even while the boat was being prepared the weather took a turn for the worse. But, with five others, he embarked and sixteen days later they reached South Georgia. His great march across South Georgia to a whaling station, the repeated efforts which had to be made before

the rescue of the remainder of his men on Elephant Island could be accomplished are matters of history not likely to be forgotten. His success was not mere chance; it was the result of fine leadership and judgment, and strategic sense of an exceptionally high order.

Scott's Last Journey.

Although Scott's journey took place at an earlier date, I have left it to the last, as being, perhaps, the culmination of all British endeavours in the polar regions.

It had long been the aspiration of polar explorers to reach the South Pole, but up to this time nobody had succeeded. Scott, himself, had already penetrated far into the Antarctic Continent during the "Discovery" expedition of 1901–04, and, in 1908, Shackleton, with the "Nimrod," had found the route on to the great plateau by way of the Beardmore glacier which Scott subsequently followed.

In 1909, Scott set about raising an expedition with the specific object of reaching the Pole. Immense preparations were required for such a task; and here I should like to impress upon all who are interested in these expeditions and who think them worth while, the importance of saving the leader as much as possible from worries and anxieties before he goes, and from leaving the country a tired man. Over and over again we see a man like Scott spending his time, substance, and energy in collecting money to fit out his expedition. That ought not to be the concern of the leader. If we in this country think that an enterprise of this kind is a matter of national importance, then let us help to relieve the leader of the burden of getting it financed.

Scott's object was not merely a dash to the Pole and back, but that the expedition should make systematic scientific observations of every kind. His equipment had some novel features, including motor sleighs and ponies. It was not intended that either of these should take the parties actually to the Pole, but that they should be used to lay the depots both for the advance and for the polar party to find on their way back.

His ship, the "Terra Nova," was fitted up to carry the whole party. She duly arrived in Macmurdo Sound, and the business of landing was successfully carried out. During the first year various expeditions were undertaken; the depots were laid during the course of 1911. The route to the Pole, we remember, was to be by the Beardmore Glacier.

The last supporting party returned on 4th January, 1912. The five—Scott, Wilson, Oates, Bowers and Evans, with an average age of thirty-six years—went on to the Pole. The weather was very varied. A good day's march was fifteen miles, an average one, eleven and a half miles.

On 16th January, when within a few miles of the Pole, it was realized that Amundsen had got there first. It was a terrible disappointment. No man was more modest and more ready to give credit to others than Scott. But here was a project which had been entrusted to him by others, and there is no doubt that he felt that the honour had been wrenched from him and his companions. Yet, it may be taken for granted that, after the first moment, his regret was far more for his companions than for himself. Amundsen is dead, too, and one does not want to criticise him, but one must as a matter of history record that, except for a telegram of three words, Scott had no idea in the first instance that Amundsen was going to the South Pole at all. Amundsen had fitted out his expedition to go to the North Pole and had put to sea. He changed his plans when he found that Peary had already got there, and sent Scott the laconic message " Am going South "—that was all.

Scott's party went on, and reached the South Pole on 18th January—a tired and disappointed crew. His surroundings drew from him that wonderfully descriptive expression " Great God ! This is an awful place, and to know that priority is not ours." That, as Cherry Garrard has said, was not a cry of despair, but an ejaculation torn from the mind of one of most vivid imagination by the immensity of his surroundings.

The return journey was terrible—eight hundred miles of intensely hard slogging to the North. Evans, the strong man of the party, had a bad fall, and after doing his best to come on assisted by the others, collapsed and died on 17th February at the foot of the Beardmore Glacier. By 6th March, they were only twenty-seven miles from the one-ton depot, but things were going badly. Oates was unable to walk and was being carried on the sledge. The temperature at midday was down to minus 43°F., and by 16th March Oates could go on no longer, and made his magnificent sacrifice in the hopes that his three companions, relieved of their burden, might be saved.

Then came those tragic, but heroic days of the last three ; Scott, thoughtful to the last, tried to ease the sufferings of the relations of his companions, and wrote words of comfort to them. Although the party had the means to end their sufferings, all determined to let Nature take her course, and not to seek refuge in self-inflicted death. They were only two marches from the one ton depot by 21st March ; but then came an eight days' blizzard, which deprived them of all power of movement—that was the end.

Eight months afterwards the tent was found, and inside the tent the bodies of Scott, Wilson and Bowers. Wilson and Bowers were in the attitude of sleep, and their sleeping bags were closed over their heads. Scott evidently died later ; he had flung back the wrappings of his sleeping bag and opened his coat. The little wallet containing

his three note-books was under his shoulder, and his arm, ever protective, was flung across the body of his friend, Wilson.

People may say, what is the good of it all? From a material point of view, there is the scientific side; there is the whaling industry in the Antarctic—a very valuable one to this country; and there is the important question of meteorological observations. But there is much more to it than that. I think the words of Dr. Nansen which I used at the opening of my lecture perhaps give the greatest incentive of all.

There are at this moment projects for other Antarctic expeditions: not such great ones as those you have just heard about, but nevertheless of importance. We have got men of experience—young, strong and vigorous, with no axe to grind, and if anything I have said this afternoon can interest the general public in what is a matter of national importance, then my purpose will have been fulfilled.

DISCUSSION.

DR. T. G. LONGSTAFF: As a member of the Royal United Service Institution I would like to take this opportunity of telling the audience what the Lecturer has not told them, namely, his own considerable contribution to Polar exploration. During quite recent years graduates and undergraduates of Oxford and Cambridge have been making a series of small expeditions to the North, which would not have attained the success they have attained but for the support of Admiral Goodenough. As President of the Royal Geographical Society, he has, in innumerable ways, supported these young men when they were organizing their expeditions. They would never have started, they would never have got the permission of their Colleges or the support of their Universities, without that official recommendation, sympathy, and in many cases, small grants of money.

CAPTAIN E. ALTHAM, R.N.: I want to take this opportunity of expressing our gratitude to Lady Royds for her loan to the Institution of the whole of the collection made by the late Vice-Admiral Sir Charles Royds, who was Scott's meteorological officer, and for the delightful Antarctic pictures and photographs which she has also lent. It was her offer of these things which really inspired me to organize the Naval Polar Exhibition as you will now find it in the Museum.

I also want to thank the many other people who, in response to my requests, have helped to form this unique collection. We are indebted to the Admiralty, and more particularly to Captain Edgell, the Hydrographer of the Navy, for some most valuable charts. Amongst the numerous relatives and descendants of polar explorers who have lent us very interesting relics, are Lady Hilton Young, Lady Shackleton, Mrs. Giffard, Commander Ross, and Mr. Nares Craig.

Mr. Joyce, who has taken part in no less than four Antarctic expeditions, and Mr. Keohane, who served with Scott in the "Terra Nova," have lent valuable exhibits. The Royal Geographical Society, thanks to the support of Sir William Goodenough, has contributed the beautiful model of the "Discovery" and many other extremely interesting relics. Admiral Domvile, President of the Royal Naval College, Greenwich, has authorised the loan of two ship models. We are specially grateful for the help and support we have received from Professor Debenham of the Scott Polar Research Institute at Cambridge, who has lent us anything and everything we wanted from their invaluable collection. To these and many others who have helped and supported this Exhibition I wish to convey the thanks of the Institution.

The customary votes of thanks to the Lecturer and Chairman were then carried by acclamation.

TEACHING IN THE ARMY

By MAJOR-GENERAL A. J. MCCULLOCH, D.S.O., D.C.M.

On Wednesday, 6th December, 1933, at 3 p.m.

MAJOR-GENERAL A. E. MCNAMARA, C.B., C.M.G., D.S.O., in the Chair.

THE CHAIRMAN, in introducing the Lecturer, said that he had had a very wide experience as Chief Instructor at the Staff College and, until recently, as Commandant of the Senior Officers' School.

LECTURE.

ON approaching the subject of teaching in the Army, two questions straightway present themselves. Firstly, does our method of teaching stand on a sound basis? Secondly, even if it does rest on a sound basis, could it be improved in detail?

We must always bear in mind that whenever a war comes to an end, we older officers relinquish a great proportion of our activities in the way of fighting, leading, planning and organizing. What do we substitute for all that? Mainly training our juniors, in other words teaching and conveying our experience acquired in war to others. Now it is remarkable that, although this is a familiar circumstance, we are never educated in the art of teaching. We spend years of our service as junior officers, yet we have seldom been instructed in the art of "How to teach."

We should, therefore, begin by examining what is the object of our teaching with regard to military training. The answer is that this object is to prepare the Army for war, to prepare it to defeat the enemy; and in order to attain this end we have to teach:—

(1) The individual to use his tools, that is to say, his weapons;
(2) The leader how to handle the weapon-users; and
(3) The users of the different types of weapons to work together towards a common end.

I propose to devote myself mainly to military teaching, but much of my argument applies equally to educational training. First, let me ask: Is teaching an art? Is everyone who knows about a subject competent to teach it? A well-known authority, Herbert Ward, Chief Inspector for the Training of Teachers in the Board of Education, writes as follows:—"There are two sides to training, an academic and a professional. Academic, because the teacher must be master of the subjects

he is to teach; professional, because he must know how to teach them. No one disputes that the teacher must himself be educated adequately for his work, but there has not been, and is not now, a universal belief that the teacher needs to be trained how to teach. In the elementary sphere the teacher, it has been held, may be ever so learned, but it does not follow that he can teach. In the secondary sphere, it is assumed that a good scholar can somehow manage to teach." Are we then to admit that there is no art in teaching? Naturally we know that there does exist a definite art in teaching, and we can begin to recognise the existence of art in any subject by tracing evils which result from breaking certain precepts of that art.

What, then, are the precepts of this art of teaching? Our military manuals supply several. I would recommend a study of the Royal Army Service Corps Training on the subject, pages 16 to 20: I consider them excellent.

"Infantry Training," I, page 16, states:—"The good teacher requires enthusiasm, sympathy with, and interest in, his men, and an understanding of their outlook. He has to present daily lessons in an interesting and varied shape. He will explain his *object*, intention, plans and arrangements."

I would like to allude to my own early teachers, remarking that I am talking of the ways of teachers as they were thirty or forty years ago; great improvements have since been made. In those days it was seldom that our teachers explained their *object* or even their reasons for setting a task. Take the Latin lesson. We learnt long strings of cases, tenses, and gender rules; we went through this drudgery, we knew not why. As a boy I had two solutions to this problem:—(1) It was intended to keep us out of mischief; (2) This came later—it was one of the subjects the master knew, and as his attainments were limited, he, poor wretch, had to go on perpetuating a fraud. I suppose the real reason for learning gender rules was that we had to learn to piece together sentences in Latin, and to do this we had to know genders. Why had we to put sentences together? Because this trained and clarified our thinking process. Now I suggest that, if we had been told why we were set this kind of task, we might have taken more interest in it.

How can we apply this reasoning to military teaching? Let us take an example. When a corporal begins to explain the Vickers gun to a group of privates, he should not begin: "This gun is made by the Vickers Company; it consists of a recoiling and a non-recoiling portion." No: he should explain the origin, the purpose and the value of the machine gun and why his pupils should learn his points. For example, he might begin: "You have learnt how the breech-loader was an

improvement on the muzzle-loader. Mainly, because it can produce more fire in a given time. The same idea induced the inventor to think how he can produce still more fire in a given time, and with fewer men. So he devised a gun mechanism whereby the recoil is utilized to act as a loader. The object of using a gun of this nature is to get an increased rate of fire and therefore increased volume of fire, produced by a reduced number of soldiers."

Another point which may help us to induce interest in our pupils is to explain why we employ a certain method. The N.C.O. instructor, although often a better teacher owing to more constant practice than the officer instructor, is apt to be an offender in this respect. He loves to keep method a mystery. Why form up in two ranks? Why, as the men lie down to shoot, are they made to turn half-right instead of facing the target? Any reason, or is it mere ritual? Can we not treat our men as thinking creatures, and not as machines? As they are treated so they will develop.

Another rule for maintaining enthusiasm, as "Infantry Training" enjoins, is the following. If the instructor expects it as a duty that his class should attend to him, he must recognize that his is the duty not to bore his pupils. A well-informed man, who is a mine of knowledge, is often a bore. Before beginning work with a class, the instructor should be given some elementary instruction in how to develop interest. For example, he may use illustrations, anecdotes, parables, or questions. If he sees his class growing bored and inattentive, he must be taught to resort to his armoury of devices. Failing all this, he must admit defeat, close his period as soon as he reasonably can, and discover some better method for the future.

My teachers bored me, but I admit it was not wholly their fault. They had been given their situation not because they could teach—a far more vital qualification than being a mine of knowledge. No, not at all; they had been selected to teach because an antiquated type of University test of erudition revealed in these men a certain faculty for juggling with dead languages, their grammar, their gender rules, and their poetic scansion. Instead of so much juggling with dead languages they should have been taught how to juggle with human minds, when to bring in an illustration or a parable. The most illustrious Teacher we know was asked: "Who is my neighbour?" How did He reply to this enquiry for information? "A certain man went down from Jerusalem to Jericho." We cannot all know the human mind as He did. Weaker ones have to be taught how to develop interest, and to promote understanding, by suitable methods.

Another precept for teachers is—optimism. Teachers seem to be deficient in this quality. Possibly to enhance their own prestige they often have, or assume, a superiority complex as regards themselves, and a "miserable sinners" complex about their class. We were disappointing; better things were expected; our plan was faulty; we should have produced a better. I suggest we should more often hear, on the teacher's tongue: "Well done! you have had a certain amount of difficulty in getting to the bottom of this"—"You are getting on"—"You will soon see daylight through the darkness." I have no doubt that Sir William Robertson, while being instructed by a corporal of the 16th Lancers at sword drill, was told that his squad was the most thick-witted lot that this corporal had ever met. Little did that man imagine that one of the squad would one day direct the strategy of the Empire during the Great War.

This tendency is possibly learnt from a tradition of the priestly caste among most races of men. In all countries we find this profession encouraging their flock to believe they are disappointments; possibly it is to scare their hearers into good ways. I venture to think that, though this method may have been of use in the past, it is not entirely appropriate to-day. Universal education now teaches us that God's creatures, mysterious though they are, breed true to type, be they sheep-dogs, carrier pigeons, or men. They are not going to be born miserable sinners who have disappointed their all-wise Creator, or little angels, almost ready to carry wings. It would be absurd if I, a senior officer, pretended I am cleverer than my listeners of more tender years. I know I am not. Ten years hence some of my audience will be here in my place, knowing more things, knowing truer things and presenting them in better and more appropriate ways. A claim to superior wisdom or infallibility is one of the most distressing symptoms of advancing years. So cultivate optimism; avoid depressing the pupil, for he has in him that germ of knowledge which may soon make him wiser than his elders. Always be on the look-out to bestow praise where praise is due. One word of encouragement is worth ten of disapproval.

Never be cynical. No one likes to see a dog snarling, and the word cynicism was derived from the Greek word dog, because the expression of the sneering man, or cynic, recalled the snarling dog. The XVIIIth century was an age of cynicism. The French aristocracy sneered at everything, even at themselves, so the crowd turned on them, and drove them out of the most civilized country of Europe. The cynic's home is mediocrity, never excellence.

One of the aims of the teacher should be to stimulate curiosity and the desire to know more. Dr. Maguire, the well-known Army coach

of the past, possessed an inspiring way of describing the beautiful strategical combinations of Napoleon or of Lee. He made his hearers feel the desire to read more such stories and to see how these great military brains applied themselves to other problems. Compare the greatest writers of crime fiction, such as E. A. Poe and Conan Doyle. Why were they popular? Their readers grew to know their methods of reasoning, their methods of solving a mystery, eliminating the impossible, comparing the probables. But there was a constant desire to see how they would deal with a new situation, and the public was stimulated to purchase the next instalment, and read a fresh adventure. So set about stimulating the desire to know more. Do not set down the young to read too " stodgy " a book at the start, such as " Clausewitz on War " or " Moltke's Projects." Let him read " Waterloo " by Houssaye—" Stonewall Jackson " by Henderson—" The River War," by Winston Churchill—" The Palestine Campaign," by Wavell. When thus stimulated to know more, they may then be able to deal with more indigestible literature, official histories, and so forth.

Another precept:—encourage the expression of thought in speech. The child at the dame school has not learnt self-consciousness, and says what it thinks. Then come the dark ages; during that long period of semi-silence—be it public school, college, academy, university—the faculty is lost. We overdo written examinations. In this respect French military education is perhaps ahead of ours. At St. Cyr the cadets are often made to express their thoughts in speech, and speak for five or ten minutes on selected subjects. This has a two-fold advantage, because it develops:—

(1) Mental activity and speed of thought;
(2) The faculty of expressing thought in speech.

To-day more spoken work is being done at Sandhurst, an excellent innovation.

The teacher must continually check himself to see that he is instilling accuracy into his pupils. Rightly enough we teachers adhere steadfastly to our curriculum, but are we teaching the young accuracy and power of decision, and are we teaching them to develop a properly balanced mind? Many pupils at our schools are up to a certain standard in classics, but cannot express themselves accurately and clearly in their own language. Their grounding has not been thorough. They have been allowed to begin the study of the dead languages before they can handle their own. Their slipshod, inaccurate English has been allowed to pass. They can spell a word but they cannot " spell " a sentence.

A pupil may learn through one of two methods:—

(1) He may acquire his knowledge from his teacher, from a book, or other authority; or

(2) He may be encouraged to discover things for himself.

The person who aspires to be a teacher must know how to hold the balance between those two methods. In the first case the student is not exercising his brain in the way of trying to discover knowledge, and there is a danger that learning may proceed without the process of thinking going on at the same time. The old-fashioned Army methods of teaching, in which leaders gave out long screeds out of the book, to be learnt off by heart by the pupils, incurred this danger. If pupils discover things for themselves, not only are they exercising their faculties of thought, but they will assimilate and remember knowledge given in this way to a far greater extent. For an example of the teacher who overdid his teaching at the expense of education I would refer to Dickens's "Hard Times." In the way of imparting knowledge the methods of Mr. McChoke-em-child are criticized. This worthy gentleman stuffed his pupils full of facts, so that they knew all the capes, bays, and watersheds in the world. McChoke-em-child was a mine of facts himself. "*Rather overdone*," says Dickens. "*If he had only learnt a little less how infinitely better he might have taught much more.*" The opposite extreme is to be found in Rousseau's "Emil." He says: "Let the boy know nothing because you have told him, but because he has comprehended it. He is not to learn science, but to discover it." Compare also Socrates' method, whereby he asks Eutryphon "What is justice?" with a view to commencing a lesson on "Ethics." Now those are extremes. We know perfectly well that we cannot expect a student to find out everything for himself, and he must accept the word of authority, or of the teacher, for a great amount of what he learns. But where pupils can be made to discover solutions for themselves, instead of having them given, by all means let it be done.

Another point connected with the art of teaching is the distinction between the teacher and the lecturer. The teacher should, as much as possible, make the class do the work. His business is to suggest, and to inspirit. He must be in touch with the mind of each of his pupils, so that he is not setting too small a task, nor too difficult a task. The lecturer, on the other hand, must assume that his audience is prepared to understand him by reason of previous acquirements. He does not worry about the brain of each individual. He addresses a mass. The single minds of his hearers are nothing to him. Those who are to profit by his words of wisdom must come already prepared, and fitted to assimilate what they hear. "A large audience excites ambition in the lecturer, and gives an artificial glow to his familiar theme, but a large

class overwhelms the true teacher with despair."[1] The dull or closed mind forms an exercise for skill on the part of the teacher, but this mind is a nuisance to the lecturer. Which is it to be, the teacher or the lecturer? Unless a commanding officer has a good idea of what form of activity is called for, he may find he is expending force to no avail. My view is that the commonest error is lecturing to people who really ought to be taught.

In planning training or teaching it must be kept systematic. What does this ungainly word imply? It implies that:—

(1) Teaching has an object;
(2) Its arrangement is so devised that the attainment of that object is easily, quickly and suitably achieved;
(3) It covers the ground to the best advantage in the available time.

Let me take, as an example, the tactical training as carried out at the Senior Officers' School:—

(1) The general object is to make a good Commanding Officer.
(2) The available time is limited, roughly to three months or under sixty working days, and the arrangement of the tactical training is devised as follows:—
    (*a*) The function of each component part of an army is explained: infantry, cavalry, artillery, tanks, engineers, air force, etc.
    (*b*) The tactical management of these component parts, in combination, is dealt with in certain leading tactical activities, such as advanced guard, attack, protection at rest, defence, rearguard.

In teaching each of these items the official system is followed; that is—Explanation, Demonstration, Execution, Repetition. In each of these four phases again a certain sequence is followed.

Thus, in "Demonstration" we first of all describe a situation, and show how it is represented on the map or model. The situation is developed until it produces a problem which calls for a decision. The solution of this problem is the application to a particular case of those precepts which have been given in the first stage, "Explanation."

Then, in "Execution" the student is asked for the considerations which he reviewed before deciding on a plan. He is next asked—(i) for his plan, and (ii) to embody that plan in suitable orders. At each stage criticism is asked for, so that a group of students may, by comparing their thoughts, evolve for themselves a suitable solution.

[1] Thring: "Theory and Practice of Teaching."

It is claimed, therefore, that the teaching is systematic, not haphazard.

Our methods in the Army have not always observed the correct sequence which a student's thoughts should follow. I will expand this. I believe that some of our defects in the making of military plans are due to our encouragement of inverted mental process. We ask a student: "What is your plan?" Then, after he has stated it, we ask: "What were your reasons?" This encourages the student to make a plan *without weighing the considerations*. That is a bad way to get down to a problem. So, always first ask for considerations; later, for a plan.

Consequently, in a plan of attack the considerations I may review are:—

(1) Enemy situation, and what is in his mind;
(2) Our own situation, and what is in our mind;
(3) Ground:—right, left or centre—surprise—cover—concealment—co-operation of arms;
(4) Time:—immediate or deliberate—surprise factor—fire plan—time for its execution;
(5) Fire:—how best employed;
(6) Depth—reserves.

An experienced leader is one who makes suitable plans, because he knows from experience what considerations to take into account, and what weight to attach to each. Plans do not leap complete from his brain as did Pallas Athene from the forehead of Zeus. I have quoted this example to emphasize the desirability of following a correct sequence. It might be said that, if we labour the matter of considerations too much before we make the student produce his plan, we will slow up his thinking process. I disagree with this, and consider that exactly the reverse is the case. If a student has been taught to review considerations adequately he will become quick at it, and he will become quick at making a reasonable plan. It is practice in the quick review of a situation which makes the good card player, and it is similar practice which makes a good plan-maker.

It has sometimes struck the reader of military history that some commanders, well versed in military history and the principles of war, have not been a success in the field, while other leaders comparatively unread but who are forceful personalities have proved a success. True, we have to admit, that the most renowned among commanders, such as Wolfe, Napoleon, Wellington, Lee, Jackson, Ludendorff and Foch, have been students of war, as well as practical leaders. The question then arises, what particular quality was missing in certain students of war, that caused them to fail as leaders in the field. In this investigation

we can lay our hand on a certain defect in military education. Students of war have been anxious to lay up a great store of military knowledge, but their superiors have not seen to it that they had a chance of putting their theories into practice.

In the four stages of military teaching, which have been stated above, it seems that the first stage, Explanation, or study of theory, has been overdone at the expense of the third stage, Execution, or putting theory into practice. It is suggested, therefore, that the teacher of military subjects should continually ask himself whether, during the instruction of his pupils in the art of war, he has been developing their instinct to act correctly in some given situation. Now the student's non-military education may have given them a wrong start for the true course. When they were taught the history of ancient Greece and Rome, and the constitutional lessons to be learnt from these early attempts at government, taxation or legislation, were they ever asked to apply what they had learnt to any particular case, or were they made to consider whether the learning absorbed from these ancient peoples could be put to some practical use concerning problems confronting us at the present day? I have heard that the scientists of the day sneered at Lord Kelvin because he used his knowledge of hydrostatics to invent a bathroom cistern.

It is only too true that most of our learning has been academic, not practical; nor have our teachers insisted that, when we can, we should bring the "academic" down to ground, and see if we cannot invest it with practical value. Furthermore, as the learner acquires knowledge, his determination and power of decision must be developed by applying his knowledge to actual problems, and letting him gain confidence in his judgment. In the individual training of the troops the same principle applies. It is of no avail to continue pumping in knowledge too long. After ten or fifteen minutes of explanation let there follow five minutes of application or testing. This is done, as will be recognized, at very early stages. The instructor will be seen explaining to the recruit how the rifle should be "aimed"; then he calls him up and makes him put this teaching into practice by laying the rifle on the mark. This holding of the balance between teaching and testing is apt to be neglected as instruction rises to higher levels. In the teaching of military history or of strategy this principle should be applied far more. When the student has seen how Napoleon arranged his corps and brought on a decisive action at the time and place that suited him, what is the next step? Shall we go on and cram the student full of other Napoleonic coups and strategical successes until his mind is choked with examples? No: we should spend more time giving him situations, and seeing how he can apply the lessons to be learnt from the great

masters. If we do this we shall find that fewer ardent students of war turn out failures as leaders in the field.

One of the attributes of the good teacher is the capacity for keeping touch with the minds of his class, for being able to tell when his learners are absorbing his teaching, when they are inattentive or for other reasons unreceptive of the thoughts he tries to pass to them. An officer should be able to judge when his subordinates have this ability, and if they have not he should be ready to help them to acquire it. Here is an example. A class is listless for some reason or other: possibly it is a Monday morning; they are thinking over events of the week-end—perhaps Saturday's football matches. A sound teacher will sense this, and will warm up the engine by exercising the pupils' thinking machinery. For example: a few questions on past lessons, a simple problem, a sum in mental arithmetic, and so forth. Again, he may feel that one of his class is not attending, and will bring back the straying mind into the sheepfold by a suitable question. At another time he may notice that one of his pupils is trying to escape observation or hide behind a comrade of bulky build. Then is the time to force the dark horse out into the limelight. But this contact with the students' minds and attitudes is only possible when the class is small. The ideal class is six or seven. Just enough brains to rub against and vitalize each other; to compare, and to criticize each other's views, answers or solutions. A teacher should be able to handle ten, but a class should not be more than fifteen. If in excess of this number the teacher can only function as a lecturer; lame dogs among his hearers will probably be deriving little benefit, and may possibly be dropping behind and wasting their time.

To give a teacher the chance to get into touch with his pupils' minds he should work with the same class until his subject is finished. How often do we see bad unit organization result in the men of a class being taken away for guards, quartermaster's working parties, etc. Even at public schools boys are not taken out of their class, thereby losing the sequence of instruction, in order to fill inkpots, clean windows, or move furniture. Yet this is what is sometimes done in the Army. The main cause is bad organization of training.

The Army officers have at their backs a much more forceful system of discipline than is enjoyed by professors and schoolmasters. Our organization of teaching should be a model to the nation.

To sum up: my main lessons are four in number:—

(1) Teach how to teach;
(2) Evoke interest;
(3) Keep in mind practice as well as theory;
(4) Observe system.

DISCUSSION.

LIEUTENANT-GENERAL BONHAM CARTER: There is only one point which I think General McCulloch has left out from his able lecture, and that is a lesson which was brought home to me very forcibly the first time I tried to teach a class of Cadets at Sandhurst. I delivered what I thought was a very fine dissertation for about an hour, and at my next lesson I asked some questions about what I had said; but no one seemed to have grasped anything at all. The reason was not far to seek: I had tried to teach too much in the time.

A very excellent bit of advice, given to me by an old uncle of mine—a professor at Oxford—was "always limit the amount you wish to teach in any one lesson to three things, never more, and stimulate your brain to think of all the various ways in which you can bring those three points in front of your pupils; then you may hope that one of the lessons will have stuck."

MAJOR-GENERAL R. G. H. HOWARD-VYSE: In regard to the Lecturer's remarks on the size of the classes, I would like to ask him what his experience is of the syndicate system, often adopted when a class is too large. With my much more limited experience I am beginning to think that, except with very highly educated heads of syndicates who are themselves really teachers, the system is not satisfactory, because it invariably results in one outstanding personality doing the whole of the work of the syndicate.

LIEUTENANT-COLONEL F. G. POOLE: The Lecturer suggested some books to tickle the palate of students before they begin heavier work on the main campaigns, and mentioned "Stonewall Jackson," General Wavell's "Palestine," and others. Might I also suggest Professor Wilkinson's "Rise of General Bonaparte,' in which he deals with the 1796 campaign in a way in which no other author seems to deal with it.

Concerning "Stonewall Jackson" I am afraid that my experience of the book is not as satisfactory as that of the Lecturer. It is a very favourite subject set by the War Office, but very often students do not follow up their history of the American Civil War by reading more important parts of it, because they have learned about Stonewall Jackson. In many cases the book merely leads them to express fulsome praise of Jackson and all his works, and to find fault with politicians.

I quite agree with General McCulloch that the practical application of the history of campaigns is most important.

LIEUTENANT-COLONEL J. C. DUNDAS: I should like to ask the Lecturer whether he does not think that one of the tendencies in teaching in the Army is to lay far too much stress on facts as opposed to deduction. Personally, when I was younger, I was taught many facts, but it was many years before it occurred to anyone ever to try to teach me to deduce facts from observations or from what I read or heard.

CAPTAIN E. ALTHAM, R.N.: It may seem rather presumptuous for a naval officer to take part in a discussion on teaching in the Army, but apart from the fact that this Institution is essentially devoted to the promotion of military knowledge in its widest sense, there must be a great deal in common in methods of instruction in all three Services. For instance, most of us, probably, have formed part of a class being taught by a non-commissioned officer or petty officer of the old school—one of the type of whom the tale is told that he was once interrupted in the course of giving a very long detail, and had to go back to the beginning because, as he put it, "I knows the tune all right, but I've forgotten the words."

The Chairman mentioned to me before the lecture that there had been some interesting developments of a new aid to instruction—the cinematograph. Some of you no doubt came to the demonstrations of instruction by talking films which we have had on two occasions in this theatre. The last was a particularly effective demonstration of that form of instruction. The Lecturer alluded to the difficulty of dealing with over-large classes, especially when it comes to some such elementary subject as the machine-gun or the rifle, where demonstration of the weapon or mechanism is an essential part of the instruction. It is here, as we saw, that the cinematograph can be of great assistance. I do not suggest, however, that it should take the place of practical instruction, only that it should supplement the latter.

For demonstrating more extensive subjects films should also be very valuable. For instance, many of us have taken part in big tactical exercises either ashore or afloat, but those who are playing a part, whether in such exercises or in the real thing, very often know least of what is really going on. Afterwards the exercise is, perhaps, explained by diagrams to a chosen few who get real benefit from them. But I suggest that if they were recorded by taking films, particularly from the air, the lessons to be learned from these exercises would be very much greater and far more appealing and lasting in their effects.

In this connection I should like to make a suggestion. One of the greatest defects in most tactical lectures and, indeed, in the exercises themselves, is that it is almost impossible to bring out vividly the fire effects. We are apt to think of tactics in terms of the movements and relative positions of units portrayed on diagrams in the form of "slugs," squares, or lines, and to forget that in war it is not so much the movements and positions of the units—be they tanks, armies, battleships or fleets—which matter, as the resultant of them—their fire effect. I submit that it ought not to be beyond the wit and ingenuity of the film-making experts to superimpose true and realistic fire effect on cinematograph photographs of tactical exercises; this, with a well-written running commentary, would provide most graphic and impressive lessons.

Another point which has been touched on is history. This Institution is steeped in history. Our library, our museum, and our theatre are all devoted to preserving and expounding the lessons of history. But I have formed the impression that younger members of the Services who are now joining this Institution in ever greater numbers view with a certain sense not only of boredom but also of suspicion the continual reiteration of ancient history and the endeavours made to draw lessons from it. There is a growing desire to study more modern history, particularly the history of the Great War, and to see whether more valuable lessons and more realistic examples cannot be extracted from the records and writings of more modern commanders. For instance, why must we be always going back to the ponderous dicta of Clausewitz and Mahan? Surely, as the Lecturer said, the writings of people who have had to deal with a far greater war than our forefathers ever visualized—people like Sir William Robertson or Foch—ought to be more worth studying. Why go back to accounts of battles on the limited scale of Wellington and Napoleon when those of operations on a vast scale, fought with modern weapons, are available. If we want examples of great leadership, they are there in innumerable episodes, such as General Smith-Dorrien's great stand, or, lower on the ladder of command, the initiative and tenacity of Evans's fight in the "Broke." I suggest that there are as inspiring examples to preserve our great traditions to be found in the modern history of the Services as there are in the more ancient tomes; and I am sure that the instructor who will take his texts from accounts of more recent battles and the writings of newer leaders will find the present generation far more attentive to his teaching than

if he continues to extract, from the history of bygone times, lessons of present-day application.

THE LECTURER:

I am absolutely in agreement with General Bonham-Carter on the point he made. The driving home of the lesson at the end of the instruction is of inestimable value, and very often makes just the difference between a point sticking in the student's head or merely floating about in his brain as some vague impression.

As regards the size of the class and the point made by Major-General Howard-Vyse, I presume that he meant that in a syndicate a weakling will try to take refuge behind some strong personality who, he hopes, will do all the answering of the questions. It should not be beyond the wit of the teacher to keep the bright boy down and let the slower ones give their answers. The advantage of the syndicate is that it allows brains to work against each other and criticize each others solutions. The instructor should be able to see that the forcible personality does not monopolise attention, or that the weakling does not take refuge behind him.

I absolutely agree with Colonel Dundas that the student ought not to be merely crammed full of facts, and that when history is taught him he should, whenever possible, be asked to deduce the lessons instead of being told them by his instructor. It emphasizes my point that education, that is to say the drawing out of the pupil's mind and the making him see things for himself instead of merely cramming knowledge into him, is preferable to mere teaching.

I think there is a great future before teaching by cinema, but General McNamara knows more about this than I do.

COLONEL P. L. HANBURY: The Lecturer has partially dealt with the question which was put concerning the syndicate. He said that it ought to be within the ability of the instructor to keep the older and more intelligent member of the syndicate from taking charge, and the younger one from hiding under his wing. There is a method we have been practising lately in my brigade; I do not know whether it is more widely known. In the 47th (2nd London) Division we make up our syndicates into three categories; a senior, a medium and a junior, and so avoid the older man taking charge and the younger man sitting quietly by and letting everybody else do the work. The young fellow is kept interested by putting him in a syndicate entirely made up of his own age and kind, and the seniors are put in their own syndicates, which deal with the more senior problems; the medium members deal with the medium problems, while the juniors are confined to their own elementary tactics.

THE CHAIRMAN:

In the last three years, instruction by cinema has been taken up very actively by the War Office. We have now three good new films in circulation and two more are being prepared. Experiments have been made with a synchronised running commentary for one of the films, but this was found to be impracticable for financial and other reasons. It has been decided that the best form of film was one with a printed commentary which could be learnt and given by an instructor. So far, this has worked very well. I am very glad to have the opportunity of drawing the attention of officers here to the fact that up-to-date good films and projectors are available in Commands. It is hoped to increase the number available as quickly as financial conditions allow. But I do not think that the Army as a whole realises that these films can be obtained. They are a very good means of instruction, and everybody who has used them speaks very highly of them.

The customary votes of thanks to the Lecturer and Chairman were carried by acclamation.

THE EXAMINATION COMPLEX

By MAJOR A. L. PEMBERTON, M.C., R.A., *p.s.c.*

> *"I wish with all my heart men in this age knew less and practised more."*—WENTWORTH, Lord President of the North, to the Privy Council, 1629.

FEW things in the educational history of the Army are more striking than the recent rapid rise to popularity of the competitive written examination. Eighty years ago, knowledge ranked low among the qualifications required by the prospective soldier. There was indeed an examination to be passed for admission into the Royal Military Academy and the Royal Military College, but this examination was qualificatory only, not competitive; and once a commission had been obtained, the pen became entirely subordinate to the sword. Wealth, social influence, and character were the qualities that counted towards promotion, and the idea of calling upon an officer to establish his ability by the use of his pen was still regarded by the majority as ridiculous.

Within the last eighty years, however, the situation has completely changed. To-day, entry into the military academies, the Army, and the Staff College is governed by the results of a competitive written examination; while promotion up to the rank of major is dependent upon success in a series of qualifying examinations, both written and practical. As a result, the officer of to-day shows signs of developing what we may call an "examination complex," in that he seems unable to rid himself of the idea that he is under examination, and, when called on to make some quite ordinary decision, is too apt to make the text-book an excuse for not using his common sense. This is not the kind of spirit that it is desired to encourage in the Services, and its existence suggests that our educational system is somehow at fault.

It is not the idea of being under test that thus upsets the average regimental officer. On the contrary, he would probably welcome any test that, in his opinion, gave a fair opening to real practical ability. But the examination, or test by question and answer, does not do this; what it does, or seems to do, is to set a premium on mere knowledge as opposed to the ability to apply knowledge.

Take, for example, the Staff College Entrance Examination. The object of this examination is, presumably, to determine whether a prospective student has the ability to profit from a two-year course in staff duties and the higher direction of war; and such ability is not to be

measured in terms of knowledge alone. It is, of course, advisable that the student should begin his course with a certain modicum of knowledge, such as is reasonably to be expected of an average regimental officer and may be used by his instructors as a foundation on which to build. But far more important than this knowledge is the intelligence or common-sense, and the character, which will enable it to be successfully applied to the problems of everyday life.

In fact, too much detailed knowledge may be a positive disadvantage, and that for two reasons: firstly, in these days of rapid change, administrative and technical details soon become out of date, so that energy expended in their memorization is practically wasted; secondly, an excessive conglomeration of detail is apt to obscure real ability.

Detailed knowledge is, therefore, only valuable in so far as it enables an examiner, or a commander, to make his meaning clear without recourse to excessive explanation. It should never be allowed to encumber the mind to such an extent as to produce a rigidity of outlook. Suppose, for example, I am describing a certain tactical situation, or writing an operation order, and, as the result of some momentary aberration, I compute all my map co-ordinates from the wrong corner of the square; an intelligent subordinate, though he might be nonplussed at first, would soon realize what had happened, and, especially if he were an examinee, would tactfully pursue the same system without any fear of a misunderstanding. A stupid man, on the other hand, would at once want to argue the point, and would probably be thoroughly miserable and unable to carry on, unless the mistake was rectified. So in other things, it is the principle behind the rule, not the rule itself, that really matters. And in a staff officer, more perhaps than in anyone else, tact and a sense of humour are essential.

The Staff College Entrance Examination should, therefore, be designed to test ingenuity rather than book lore. At present we do not appear to discriminate sufficiently between intelligence and knowledge, and, as a result, increasing competition has forced up the standard of knowledge higher and higher, until the day now seems to be in sight when the student will have as much knowledge when he enters the Staff College as when he leaves. If, then, we take into consideration the large number of candidates who fail to obtain a vacancy, it will be seen that the junior ranks of the Army must eventually contain an excessive proportion of potential staff officers and brigadiers whose erudite minds may find irksome the humble tasks of a company or platoon commander.

To be precise, the Army is in danger of becoming, if it has not already become, over-educated. Nor is this state of affairs confined to the Army alone. To-day it is to be found in practically every sphere of our

national life ; on all sides are to be heard the lamentations of the over-educated—people who have lost either the desire or the ability to do work of a practical but unintellectual order, yet who are deprived by circumstances of the chance of doing any other.

This is the result, as explained above, of increasing competition, which has forced up the standard of knowledge too high, owing to the fact that knowledge has remained hitherto the only accepted means of measuring mental efficiency. It has too often been forgotten that there is, for every individual, an economic standard of knowledge, which depends upon (*a*) his ability, and (*b*) his opportunities to apply what he has been taught.

True, the application of knowledge need not always be direct ; it is sufficient, if, in the acquisition of our learning, we exercise and strengthen some mental power, such as the power of clear thinking. But, alas, there are many who study hard but who fail to achieve, or even aim at, so laudable an object. They are actuated, no doubt, by that kind of mental modesty which makes some people put on learning as they put on clothes, with no other aim than to hide their nakedness.

One cannot, of course, entirely condemn such motives. The world would be a dull place without either fine clothes or fine learning, and the learned fool may not unreasonably pride himself on the strength of character that has conquered his intellectual defects. There must, however, be a limit beyond which the cultivation of knowledge becomes definitely harmful, and reasons have been adduced above for believing that that limit has already been passed. Even in the Army there are signs that education has been carried beyond the level of practical requirements, and that the surplus knowledge thus engendered has led, not always to better citizenship, but sometimes to the creation of idle longings.

If this be granted, it must also be admitted that our present examination system requires modification, since it is based on the present attitude of reverence towards learning. Before attempting to define the remedy, however, it will be as well to make a brief survey of the causes that have led us into this error.

Our present evolutionary cycle may be said to have begun with the collapse of Rome. It was too much intellectual freedom that had brought about this great catastrophe by undermining the discipline and sapping the morale upon which the glory of Rome had been founded. Small wonder, then, that the vigorous, if savage, chieftains who took her place should have evinced a hearty contempt for learning. Under the tribal and, later, the feudal system, intellectual attainments were of less

account than skill at arms, and the nobles were content to leave education almost entirely in the hands of the Church.

By degrees, however, as the new civilization developed, the status of learning underwent a change. The great princes and nobles had early insisted on a practical education for their own children, and with the growth of commerce and the spirit of nationalism, a similar demand was made on behalf of the embryo civil servant. This led in France, Italy, and Germany to the formation of academies, often conducted under royal patronage, where soldier and statesman learnt, side by side, the rudiments of their duties in Court and State. In England, the idea never took root, and when, in the early XVIIIth century, the dissolution of the soldier-statesman and the increasing size of the standing Army necessitated a special course for the prospective Army officer, the Royal Military Academy was founded by the Board of Ordnance at Woolwich with aims and organization that differed from those of its continental predecessors.

In all countries and in all professions, however, the system of selection had remained the same ; vacancies were filled by personal recommendation, and although a certain minimum of knowledge was demanded, the standard—in the Army at all events—was very low. In 1774, when an entrance examination for Woolwich was first introduced, all that was asked of the would-be Cadet was a knowledge of the first four rules of arithmetic and the elements of Latin grammar.

Nevertheless, from the time of the Renaissance, the growth of the scientific spirit had been causing a gradual change in the general attitude towards learning ; and the industrial revolution of the XVIIIth and XIXth centuries gave a great impetus to this movement by showing how knowledge could be converted into power. Simultaneously, the multiplication of petty capitalists led to an important change in the political situation. With the passage of Disraeli's Reform Act of 1867, Great Britain became for the first time a real democracy, and it was quickly realized that an improved education would be necessary for the nation's new political masters ; a system of State control was introduced, and from that moment the spread of intellectual finery, and the competition for the learned professions, grew apace.

There is, of course, nothing to be said against the extension of the benefits of education. Every step in the process has been justified, sooner or later, by practical necessity, and few who have read the history of the Cardwell reforms (1868–74) will deny the superiority of our present system of selection and promotion in the Army over that which obtained in the days of " purchase." A well-filled mind is admittedly a better guarantee of military efficiency than a well-filled purse ; but it

is now time to consider whether knowledge is the only, or even the best, evidence of mental efficiency.

To the early educationists, no doubt, it presented itself as the most obvious, and therefore the most easily measured, manifestation of mental strength. Just as it seemed fair to assume that a big chest measurement was indicative of physical fitness, so it must also have seemed fair to assume that a wide expanse of knowledge meant a strong and vigorous mentality.

The day is long past, however, when the medical examiner would be satisfied with the measurement of externals; he now insists on knowing the state of our lungs, heart, teeth, blood pressure, and other details. And so with the mind, psychologists are beginning to demand a greater degree of variety and precision in our tests; mental efficiency has been resolved into at least three distinct components, which may be referred to as practical ability, intelligence and character.

Practical ability includes all those elemental muscular and nervous reactions—such as manual dexterity; visual, aural, and tactual discrimination; immediate and remote memory—that count for so much in the simple, practical operations of everyday life. Intelligence is not so easily defined; like electricity, it is one of those natural phenomena, the reality of which none would deny, yet the exact nature of which can only be guessed. Some regard it as a general faculty of educability, applicable to all forms of activity in which the intellect plays a part; others see in it a composite quality comprising as many independent intelligences as there are distinct intellectual processes. All are agreed, however, that it can be measured independently of knowledge, and that its possession determines, in part at least, the degree to which education can be usefully employed. For example, if a man is found to have the intelligence of an average child of ten—and experiments have shown that there are many such men to-day—it is a waste of time to force more knowledge into his head than one would expect the average child of ten to be able to apply.

There is much pioneer work still to be done in this connexion. Capacity, i.e. practical ability, and intelligence tests, though long the subject of experiment by industrialists and educationists, have not yet been seriously applied to the Army. The latter is naturally a conservative institution, and an examination of past records will show that it may take half or three-quarters of a century for a new movement to work its way through the national educational system and make its influence felt upon the soldier. Within the last half-century, however, the rate of progress of civilization has been increasing very rapidly, and it is unlikely that we shall be allowed as much as fifty years in which to consider our attitude towards the capacity, and the intelligence, test.

Indeed, it is questionable whether the time has not now arrived to begin experimenting with these measures on a large scale, with a view to selecting those which are applicable to the needs of the Army.

Character, though its importance is obvious enough, is even less easy to define than intelligence. We are here in the sphere of those elusive moral factors about which so much has been written, yet so little has really been explained; and it may be thought that there is no place for the examiner or the mental tester. When one considers, however, what science has achieved in the past, it is difficult to believe that even character will not eventually yield to classification and analysis. It was prophesied many years ago that, as the XIXth century was the century of physics, so the XXth century would be the century of psychology; and it may well be that, before many decades have passed, we shall be measuring courage and perseverance with the same ease and assurance that we now measure height and weight.

In the meantime, without exposing ourselves to the charge of rashness, we might venture upon certain preliminary steps. For example, our examination system might be remodelled to give the correct degree of prominence to practical ability, intelligence and character. In the Army, character is of more importance than practical ability; and, in the lower ranks at any rate, practical ability is of more importance than intelligence. Selection should, therefore, be based on the following, in order of precedence :—

(1) Reports on character.
(2) Written and oral examinations of the "project" type, requiring the application of knowledge to concrete problems.
(3) Intelligence tests.
(4) Capacity—i.e., ability—tests.

General knowledge papers, dealing with military history, imperial organization, political economy, and kindred subjects, may be introduced to ensure that the soldier keeps abreast of the times, but they should not form part of any competitive examination. A certain standard of knowledge should be demanded of the candidate, according to the class of appointment for which he is applying, but no more; it should be clearly explained that in future mere knowledge will not be accepted as evidence of mental efficiency. It is not, of course, thereby suggested that a respect for knowledge is altogether wrong. It is, however, essential to discriminate between the ornamental and the practical. Until we do so, we shall never get rid of the "examination complex"; and, much as we may admire the magnificent edifice of modern learning, there are times when we must feel, like the famous Earl of Strafford, that it would be a good thing if "men in this age knew less and practised more."

IMPERIAL DEFENCE

THE ARMAMENT MOSAIC

By "TESSERA."

SELDOM, if ever, has an exercise between two of the Services been so fully reported and aroused such widespread interest as that between the Navy and the Royal Air Force which took place off the Firth of Forth in September last. This was, probably, due to two reasons; firstly, the Press was represented by an exceptionally large number of naval and air correspondents and special reporters for an event of this kind; secondly, it was the first time that such a large concentration of aircraft had been made for an exercise with the fleet.

Actually, the exercise was on quite elementary lines, and its object was confined to much needed training for shore-based flights, which seldom have an opportunity of practising against ships. Many of the press reports showed a true appreciation of the conditions and were distinguished by level-headedness; but, in certain cases, the better judgment of the special correspondents was affected by the enthusiasm of those to whom they were temporarily attached. In the imagination of some of those in the air the surface vessels were "bombed out of existence"; in the imagination of some of those in the ships or in ship-borne aircraft the formations did not have an easy passage to their objectives.

It would be absurd to base any large policy on this training exercise; but the very fact that the Navy and the Royal Air Force met in mimic warfare induces reflections on our defence problem. The complexity of the problem and the difficulty of arriving at a satisfactory solution are indeed great. With an inexhaustible Treasury the solution would be easy, but, with limited financial resources, the most careful balance must be kept between the three Services, and it is far more difficult for our own statesmen and experts to arrive at a correct division of the available money than it is for those who decide these weighty matters in other countries.

It is our peculiar geographical position that is responsible for this state of affairs. There are three countries in the world which either depend for their existence on the inviolability of their sea trade routes, or believe that the possession of adequate power to fight for supremacy

at sea is a necessary feature of their defence system; but only one of these Powers, Great Britain, is also compelled to give equal attention to land and air warfare.

The responsible ministers in Japan have to arrive at a balance between the demands of their army and their navy. A large army must be maintained for the defence of their newly acquired territories on the mainland, and the further they penetrate the greater will be the demands on that army. Being an island Power, sea trade routes are vital to Japan's existence and, owing to her geographical situation, she can only be invaded by sea-borne forces. Therefore the case is clear for maintaining a powerful fleet. But, unless and until a neighbouring mainland country builds up a strong force of abnormally long-range bombing aeroplanes, she is spared the menace of attack from shore-based aircraft. The demands of the navy and army for co-operation aircraft must be met, but that is a very different thing from a demand for a great defensive force of aircraft.

The situation as it affects the United States is not quite so clear. That country is not so dependent on its sea trade routes as Britain or Japan; its oversea possessions are not extensive and make no great demand on the army Vote and, owing to its geographical position, it is immune from air attack by shore-based aircraft. It is inconceivable that either Canada or Mexico will acquire an air force that would constitute a menace. But the Americans are a virile people and, remote as are the probabilities of their defence being tested and remote as are those countries which could deliver attack, national pride and a policy of taking no chances influence their determination to be second to none in sea power. Canada is not a menace in a military sense; the Phillipines will probably be handed back to the indigenous population ere long; and the army chiefs must always find difficulty in justifying a high army budget. There seems to be a lack of tangible commitments, but, obviously, a large defence air force is not needed.

It is clear, therefore, that these countries derive great advantage from their geographical position. Great Britain has no such advantage. Our insular position is at once our pride and our danger. Our sea trade routes are far more vital to us than those of any other country, for, if they are cut, we die. Japan would not die if her incoming trade was stopped, though she might have to tighten her belt. The people of the United States would suffer inconvenience and financial loss if sailings were suspended, but they would not lack the essentials for existence, as we would.

Again, our various overseas possessions must be garrisoned. India must be protected from dangers without and within, and troops must be

held in readiness to go to the help of British subjects in any of the vast areas or widely separated localities painted red on the map. The maintenance of these oversea troops necessitates the maintenance of an adequate reserve for periodical reliefs. The figure at which our Army must be kept is related to something very tangible. If we fail to garrison our oversea possessions there will at once be an orgy of bloodshed; if Japan failed to maintain an adequate military force in Manchukuo and Korea, there would probably be an orgy of destruction and pillage and murder; but, if the United States reduced their army to very small proportions, the only immediate danger would be the possible difficulty of coping with civil disturbances in their own country—and civilised countries do not maintain an army solely for that purpose.

Our close proximity to the continent lays us open to every form of air attack, and if we do not maintain an adequate defence, we might be compelled to plead for terms twenty-four hours after a declaration of war. But, if the parliaments of Japan and the United States suddenly refused to vote any more money for air forces, the security of those countries would not be imperilled because there is no one near enough to deliver an attack.

Turning to the countries that do not attempt to maintain large navies, we find that the same general arguments apply, and that their problem is not so involved as ours. Continental Powers, with their long frontiers, must give first consideration to land fighting; the first charges on the money available for defence must, therefore, be for their armies and their air forces. Certain of their sea communication routes are important, if not vital, and they build their fleets for the purpose of protecting those short routes. Coast defence also receives consideration, and their navies include a proportion of vessels suitable for that special purpose.

This broad review of the situation brings out, forcibly, the truth of the statement that our problem is more difficult than that of any other country, and it follows that we have to be far more careful than they have to be in arriving at the correct balance between the values of the various means of defence. As the strength of the Army is based on a tangible need of the moment, i.e. the garrisoning of oversea possessions, the wisdom of spending a certain annual sum on it is not in dispute. That small section devoted to coast defence alone is vulnerable to criticism. But the strength of the Navy is not based on an *immediate* need, except that of policing certain waters abroad. Throughout the centuries it has been the endeavour of British statesmen to keep the Navy up to a standard which will enable it to make a good fight for the mastery of the seas, and that standard has usually been a reflection of the political state

of the world. There have been times when it was safe to prophesy that it would, sooner or later, have to bear the brunt of attack by no less than three maritime Powers; more often there have been two waiting their chance; in the decade before the Great War there was only one. But the need for keeping up a certain standard is not a *tangible, immediate* need; and so the Navy becomes vulnerable to criticism, and vulnerable to those responsible for opening the public purse. The same may be said of the Air Force, but the nightmare of a devastating bombing attack on the metropolis no doubt helps the responsible Minister in his efforts to cajole the Chancellor.

Our problem, then, really amounts to this: after the money for the Army has been extracted from the Treasury, there remains a sum for other forms of defence; how much of this sum is to be apportioned to the Navy, how much to the Air Force, and how much to coast defence. Or, to put it another way, can the Air Force perform efficiently and at a less cost any of the functions of coast defence artillery or of the Navy.

The first step towards an answer to this question is to state clearly what the Air Force can do. Now, an aeroplane can fly a certain distance; that distance depends on the fuel endurance and the design of the aircraft. It can only carry a certain weight, and if it carries an offensive weapon—a bomb or a torpedo—it cannot carry so much fuel, and the heavier the weapon the less the fuel. Nevertheless, the torpedo-dropping plane can carry its torpedo for a considerable distance and still have enough fuel to return; the bomb-dropper can do the same; but physical factors set limits to size; the torpedo carried is a small weapon compared with those carried in ships, and the bombs are small compared to the shells of ship-mounted guns.

Let us first see how these conditions affect the problem of coast defence. Bombing formations can fire one "salvo" at a ship when the ship is far away from the shore; return, reload, and fire another "salvo" an appreciable time later. An enormous number of flights would be required to produce a succession of "salvoes," such as would correspond to the ordinary attack by a coastal battery and, if the cost of aerodromes, the overhead charges, the wages of the personnel, the cost of the machines are all added up, it may be found that the money needed to produce a few aerial salvoes is about the same as is required to produce a continual succession of salvoes from a coastal battery. The crux of the question lies in the effectiveness of the aerial salvo. Is it likely to be so accurate and so destructive that, on a balance sheet, the cost of the air force necessary to deliver a certain intensity of attack is definitely less than the cost of that same attack if delivered by shore guns? Doubtless a difficult question to answer to-day, but a great deal depends on the answer.

But that is not all; it is possible to take the point a step further. It is axiomatic that weight carried and radius of action are inseparably bound together. The bomb of to-day is powerful, but it is not such a menace to a well-constructed ship as a high explosive shell from a big gun. If the bomb is increased in weight to equal or to exceed the blow of a heavy gun shell, the radius of action will be proportionately decreased and, if the policy is pursued to extreme limits, the aircraft would only be able to deliver their blow at the same range from the shore as the shore battery can deliver its blow. That is, of course, *reductio ad absurdum*, but it helps to clarify thought on this complex project. The heavier the weapon carried by the defending aircraft, the nearer to the coast can an enemy approach before it will be attacked.

So far it has been assumed that for the protection of a certain stretch of coast we can use either aircraft or guns and must choose between them as we cannot afford both. But the issue does not begin and end there, because our coast line is of great length and studded with important points; also, a policy which ignores weather conditions cannot be regarded as sound. There are a large number of important harbours and towns dotted round our coast; there are certain places which are topographically suitable for landing a raiding force or an army charged with a more ambitious object than a raid, and even if it be known that an enemy fleet has sailed for an enterprise, no one can tell till the last moment where the blow will fall. The enemy fleet may be sighted by day, but where will they go during the night and where will they appear at dawn? If there is a haze over the sea or there is fog, will they be seen, even by day?

Assume for a moment that the accuracy and intensity of the aerial salvo puts that form of attack much higher up in the scale than the attack by shore artillery, and that we would, for financial reasons alone, wish to replace coastal artillery by Air Force formations; could it be guaranteed that our striking force would be able to strike whenever the enemy appeared? In other words, could we ever maintain a sufficiency of aircraft to cope with an impending attack at any vitally important point on our coast? Great as their mobility undoubtedly is, the very thought of the numbers that would be required for security is staggering.

When we come to consider weather conditions, we must remember that our coasts are constantly subjected to storms, mists and fogs. At certain times of the year low visibility is more usual than high visibility. A fleet bent on raiding our coasts would certainly not appear on the day most suitable for the defence, and ships can be taken to a chosen position in anything but the thickest weather. But, at all times, if an enemy fleet succeeds in getting within range of its objective, the

ships must, as a corollary, come within range of shore artillery sited for the defence of that objective. The enemy reveals his presence as soon as fire is opened, and the shore artillery can at once reply; but ships do not require much time to deliver their attack, and, under such conditions, the damage might all be done long before any aircraft could take off, even if there happened to be an aerodrome in the vicinity.

Another factor which must be taken into account is naval anti-aircraft gunnery. If no longer in its infancy, this is still in its youth; and it improves year by year. There was a time when bombing formations could have sailed majestically over their victim and manœuvred for exactly the right position with little fear of deflection from their task. That is not so to-day. Given good training, a good personnel, skill in control and a little luck, formations of bombers—large machines making a stately approach—might well find their onward path beset with difficulty. The fortress gun, on the other hand, has always been in a privileged position: it can only be put out of action by a direct hit and direct hits at long range are very difficult to get; it has an enormous target, and its mathematical problem is easy; rangefinders can have a long enough base to give the range within a yard; and if the gun is mounted high enough from the water line, even accurate ranges are not required. The odds are, and always have been, immensely in favour of the shore gun, and that is why very few guns of comparatively small calibre constitute such a menace to ships.

Putting all these arguments together and remembering that it would be folly to leave vital points on our coast open to attack from the sea, the logical conclusion is that we must confide to coastal artillery the defence of those points, however potent the work of bomb-dropping aircraft becomes. For this purpose we must have a weapon which is as reliable as possible, and coastal artillery can be relied on under nearly all conditions. Bombing aeroplanes cannot be relied on under many conditions: we could never maintain enough to meet attacks from any point; we could never maintain enough to produce a continuous attack corresponding to artillery salvoes; they could not operate in thick weather. Is it not the old story of the cobbler and his last? We do not want this new and wonderful weapon to replace something that is already very efficient and very certain of meeting old requirements. A new weapon requires new fields in which to work.

Time and again in the history of armaments a new weapon has been invented and enthusiasts have claimed that it will supersede all existing weapons. Time and again trial and experience have profoundly modified early optimism, and the new weapon has taken its place in the armament mosaic; it has not displaced the older weapons in meeting old forms of

attack, although it may have helped to extend their scope; its real merit has usually been to meet and deliver new forms of attack. As an illustration, we need look no further back than the exaggerated claims made for the submarine immediately after the War. It was loudly proclaimed that the capital ship was dead, the submarine triumphant; yet, to-day, the submarine's particular powers and limitations are well understood: the capital ship survives; the submarine is in its proper place in the mosaic. Once more we read that the capital ship is dead; this time it is the aircraft which is proclaimed triumphant. But that is because the particular powers and limitations of the aircraft are not yet widely understood. Let us examine these a little further before we assert that the Air Force can replace any section of the Navy.

The great value of aircraft for reconnaissance is so obvious and so generally appreciated that it does not require to be elaborated. It is sufficient to say that as a means of finding and reporting an enemy they are unequalled. But it is their capabilities and limitations to attack and to secure lasting results and as a means of defence which require very careful examination.

The peculiar characteristic of the bombing and torpedo aeroplane is that it can carry its " salvo " anywhere within its radius of action at very high speed, provided the weather is suitable, and can discharge it at its objective. It is this characteristic which should be exploited so that this new weapon can be, so to speak, fitted into the mosaic. We have seen, already, that vital points on the coast must be made secure by coastal artillery; but there are long stretches of coast line which are not thus protected—stretches where bombardment from the sea would be a very serious matter to material and morale; stretches where an enemy might attempt a landing. These stretches can be made fairly secure if a strong aerial attacking force is available. It is here that we find the coast defence role of this new weapon. Given favourable conditions, an approaching enemy fleet may be detected and engaged by aircraft when still at a safe distance from the coast; but this implies that the weather is fairly clear and the light good, and that, for attacking, the cloud conditions are favourable, the enemy's anti-aircraft fire not too efficient, and that the bomb and torpedo dropping performance of the defending aircraft is of a high order. Moreover, a large number of flights must be available to produce a large number of salvoes. Failing these conditions, the enemy will reach the coast. If he arrives off a vital point, he should be met, primarily, by coastal artillery; if he appears off a part of the coast where there are no shore guns, he should be engaged at the earliest possible moment by the Air Force; but, if weather or other conditions preclude aircraft operating effectively, or their efforts prove

insufficient to deter a determined and well-equipped enemy, then it will devolve on the nearest naval forces to drive off the hostile fleet, as has always been the case in the past.

Many centuries ago the defence of our coast line was the Navy's main object in war, but to-day a coastal bombardment is, at the most, a minor operation designed to shake morale, while nearly all the new weapons invented during the last fifty years serve to strengthen resistance to attempted landings; barbed wire, mobile searchlights, mobile artillery, machine guns, mines and wireless, all combine to make landings extremely difficult. No responsible advisers would recommend such a hazardous operation—one which would, almost inevitably, entail grave losses in ships and men—if exactly the same object could be achieved by operations fraught with less risk. There was a time when the defeat of England could only be accomplished by landing an army and by a military occupation; but to-day it will have been accomplished if our sea-borne imports are stopped.

It is this danger of being deprived of our supplies from overseas which nearly proved fatal in the last war and which will be even greater in the future. Moreover, and this is all important, it is not necessary for an enemy to seek to intercept those supplies close to their destination; they can be interrupted by armed ships far out on the ocean routes where nothing but better-armed ships can guard them. The radius of action of aircraft is limited, and, therefore, enemy ships operating against our shipping will work outside the radius within which our aircraft might afford protection.

It follows, therefore, that the armed ships, both friend and foe, must have good endurance and a large radius of action to fit them for this ocean work—as distinct from work in the narrow seas. From this it has been argued that, as attacks must be delivered by ships of moderate gun power so as to allow of large fuel capacity, e.g., cruisers or armed liners, therefore it is only necessary to operate ships of similar power against them. But this ignores something axiomatic to all forms of fighting. The weapons which are used to deliver attacks on trade, to raid coasts, or to force landings, all work under the shadow of whatever is the strongest vessel afloat. The *ultimate* decision always has and always will rest with these more powerful units, though it may be a long time before the decisive struggle takes place. The man who thoughtlessly cries " battleships are dead," should ponder on this axiom, and see if his dictum is logical.

With the picture of the last war so fresh in mind, it is not easy to remember that the geographical conditions were peculiar and that only a comparatively small area of water separated us from Germany. In that

war the decisive struggle was bound to take place in waters that could have been easily reached by the air squadrons of to-day and, if such squadrons had existed in 1914, " battleships *versus* aircraft " might have been a profitable subject for debate. But seldom before in history has that final trial of strength taken place in the narrow seas, and no one can foresee where it will take place in a future war, when the pressure of many different factors will cause the concentration of full strength by both combatants. The final sea battle of the War of American Independence was fought in the West Indies, the final sea battle of the Napoleonic War was fought off the coast of Spain. Historical precedents are not always convincing; but they are worth attention when certain fundamental conditions remain approximately the same. It is true that ships moved at a slower speed then, and it is also true that the speed ratio between commerce carriers and ships of war has altered considerably in favour of the latter, thus greatly increasing the difficulties of defence. But the trade routes are not very different. Once we begin to think of oceanic war, direct intrusion into the final contest by shore-based aircraft at once becomes very problematical.

On the other side of the picture, however, is the enemy's air attack on our trade when it is compelled for navigational reasons to pass within striking distance of the enemy's coast. It has already been remarked that new weapons require new fields, and it is in this narrow sea trade protection work that we find a supremely important role for this new weapon.

Assuming that our armed vessels can stave off the distant attack on our trade routes, the convoys or single merchant ships may still have to run the gauntlet of air attack when nearing home. Here is work the Navy cannot do. Here is a role for our own shore-based aircraft. It is a case of like meeting like. So long as the armed ship exists, a potential foe to the unarmed ship exists. The armed ship must be fought by her counterpart. Aircraft must be fought by their counterpart. If the day ever comes when commerce is carried in the air, then will be the time for all defence to be confided to the air.

The arguments used earlier to establish the role of the air force in coast defence can be used again to establish its role in sea fighting. Once again it is a case of the cobbler and his last. The aeroplane can reconnoitre, shadow and report in a way nothing else can. The aeroplane can, under certain conditions, deliver a torpedo or bombing attack on enemy vessels which are beyond the range of gunfire and beyond attack by destroyers. The tactical value of such an attack may be great. The aeroplane can spot for long range gunnery or bombardment in a way nothing else can. The aeroplane is thus an immensely important adjunct

to the fleet. Its place in the mosaic is assured, but it is only one piece in the mosaic.

It is very natural for air enthusiasts, and particularly the younger ones, to claim predominance for the weapon they operate; it is very natural for those concerned about expenditure on armaments to welcome eagerly anything that might reduce the annual estimates; but, if the mosaic is not very carefully constructed, we may rue the day when the slogans, "battleships are dead as the dodo," " coastal artillery is archaic," attracted the attention of the nation. If the day comes when the people clamour because their food supplies are being stopped hundreds of miles away by enemy cruisers, it will be small consolation to point to a magnificent air force waiting to take off from a hundred aerodromes. If enemy ships appear off some large and important town in foggy weather and blow the place to bits, it will be small consolation to point to a hundred ardent young pilots who are fretting to be allowed to take off and bomb the insolent ships to death, but do not know where to find them or, having found them, are unable to land to replenish their fuel and bombs. Equally, if our steamers are sunk, one by one, by enemy shore-based aircraft when they can almost smell their home port, it will be small consolation to point to a hundred cruisers on the trade routes.

Our geographical position is peculiar; our defence problem is extremely difficult; the construction of our armament mosaic requires most careful thought. Above all, the building up of that mosaic should never be " rushed," or influenced by the ebullitions of enthusiasts or cranks who believe that the latest weapon has replaced all the older ones and that it will prove infallible under all conditions.

THE NAVY AND THE NATION

By Lieutenant G. M. Bennett, R.N.

1694.—*" I will make no other introduction to the following discourse, than that as the importance of our being very strong at sea was ever very great, so in our present circumstances it is grown to be much greater because, as formerly our force of shipping contributed greatly to our trade and safety, so now it is become indispensably necessary to our very being."*—From Halifax's " Rough Draft of a New Model at Sea," published in 1694, but probably written earlier.

1933.—*" Ignorance in general throughout the electorate upon sea matters is amazing, and particularly vague upon the imperative necessity of an adequate Navy to assure the safety of all the various parts of our scattered Empire, upon which, alone among the Nations, our liberties and continued existence absolutely depend."*—Admiral of the Fleet Sir Arthur Fanshawe in " The Times," of 31st August, 1933.

A CASUAL search through the annals of British history will reveal the everlasting struggle with which our Navy has been faced in order to obtain sufficient money for its ships, and an adequate number of men to man them. The latter difficulty resulted in the ignominious practice of the press-gang, which terrorised the taverns and houses of the sea-ports for more than two hundred years. It is no honour to this country that at a time when the British fleet alone stood between Napoleon and his domination of Europe, our ability to man that fleet depended very largely on impressment. Nor was this practice a credit to a Navy which failed to realise that one reason for such a shortage was within its own province. Subsequent examination of conditions of service in the fleet led to such remedies that, for every man now recruited, there are approximately thirty disappointed volunteers.

But, if the shortage of men was in part the fault of the Navy, the shortage of money was due entirely to the gross ignorance of people who, throughout the centuries, have turned a blind eye to the needs of our first line of defence. This obstinacy, so characteristic of Englishmen, is not, however, unconquerable ; at the end of the last century, a time of peace and prosperity, a wave of naval enthusiasm swept the country,

symbolised by the lyric :—

" We don't want to fight, but by jingo if we do,
We've got the ships, we've got the men,
We've got the money, too."

It was the Naval Defence Act of 1887 which provided the solid rock upon which the Grand Fleet was built, and which saved the Empire in its darkest hour.[1]

To-day we are faced with a novel situation and curiously conflicting influences. The general demand both on moral and material grounds that, in future, there shall be no more war, has inspired attempts at disarmament in the fifteen post-War years. The electorate of Britain has been led to believe that their prosperity and happiness can only be assured by supporting those attempts. But the issue has been confused by a general impression that naval and general disarmament are one and the same thing, and by the failure to realise that naval reductions by the principal sea powers were only intended to pave the way for a reduction of all arms by all the Powers. Now the time has come when it may well be asked is general disarmament, which has not got further than the conference room, doomed to fail, and will the British Empire find peace in holding to its present policy ; will it not be forced to rely once again for security on that fleet which, throughout centuries of history, has served it so well ?

It is not intended to enter into a discussion as to the size of the fleet which will be required ; it is sufficient to say that it cannot be smaller than it has been of recent years, and to recall the report of the Imperial Conference of 1926, which said, " even after a large measure of reduction and limitation of armaments has been achieved, a considerable effort will be involved in order to maintain the minimum standard of naval strength required . . . namely equality with the naval strength of another Power." If the money is to be made available to maintain the Navy, even at this low standard, it will be necessary to enlighten the stubborn ignorance of the British electorate. With this in view, one of the first things to get the English people to grasp is that, although the fleet may be a weapon of war, it is also an all important instrument for the preservation of peace.

Such being the situation, it seems timely to examine and summarize what are the best and most reasonable methods to employ in order to overcome our national ignorance of and indifference to the Navy and what it stands for.

[1] Admiral of the Fleet Sir Frederick Richards, speaking in 1893, said : " The Act was the outcome of popular agitation in consequence of the relatively weak state into which the Service had fallen, due to deficient annual provision in the past."

For want of a better word these methods may be collectively termed, propaganda, aimed at :—

(*a*) Educating the British public in the vital necessity for the Navy as being essential to National and Imperial Defence ;

(*b*) Inspiring the electorate with a lively enthusiasm for the Navy.

The following are suggested as the methods by which these aims might be realised :—

Schools.—The foundations of any form of education lie in the instruction of the young. Naval history and the influence of sea power on the creation and prosperity of the British Empire are almost entirely neglected in schools of all types. " I would earnestly plead," writes Admiral Fanshawe,[1] " that a condensed and general knowledge of Mahan's works should form part of the curriculum . . and be taught in every school for boys and girls thoughout the Empire." In practice Callender's " Naval Side of British History " would, perhaps, form a better basis for such instruction ; but it is by some such method as this that the naval education of the rising generation can be improved. Even if its effects are not at first apparent, it should eventually produce an electorate which is truly alive to our naval needs.

Books.—These are an essential component of any form of instruction. They may be divided into three classes : serious works, such as those of Corbett, Hurd, Fayle, or Mahan ; semi-serious, such as " A Naval Lieutenant," by Etienne, " Smoke on the Horizon," by Rear-Admiral Usborne, and " Endless Story," by Taffrail ; and novels by such authors as Colonel Drury, Commander Stephen King-Hall, and " Bartimeus."

As propaganda the value of the first class is negligible, since books of that character are only likely to be read by those who are already cognizant of the necessity for a Navy. This applies to a lesser extent to semi-serious books, although they may be of some value if used at schools in co-operation with any general text-book. Novels are the most important, since they are likely to reach the greatest proportion of the public. It is, however, very difficult to make a book a popular success to order, yet to be of real propaganda value such success is essential. In peace this will depend, normally, more on the author's name than on the subject. Taffrail and Bartimeus made their names during the War by writing naval stories at a time when the nation was intensely interested in it. It might, therefore, be profitable to send to the fleet two or three popular and well-established writers, such, for example, as John Masefield, Hugh Walpole, and J. B. Priestley, in the hope that they might subsequently write naval yarns which would be best-sellers.

[1] *The Times*, of 31st August, 1933.

Newspapers.—It will be as well to make clear at this point that we are only considering propaganda in peace, and that therefore no question of government control of the Press can be entertained. This does not, however, prohibit the use of the enormous power of our national newspapers for the type of propaganda which we require. Bearing in mind that the "Freedom of the Press" can be a two-edged weapon,[1] and therefore requires careful handling, we can subdivide this method into news paragraphs, special articles, photographs, and cartoons.

All these forms are well known and require little comment, having been well-developed since the days of the Great War. Admiralty liaison with the Press, and the continued visits of correspondents to the fleet, have resulted in a certain degree of controlled propaganda. Better results would probably be obtained if a greater number of these correspondents were retired naval officers; there must surely be many with sufficient qualifications to fill such posts. In any case, the most important factors are likely to be the manner in which the correspondents are handled, the way in which the salient points of exercises are put before them, and the extent to which the objects, and lessons learnt, are brought home to them.

Posters.—The now abolished Empire Marketing Board established some 25,000 special hoardings throughout the country on which were displayed artistic and entertaining advertisements, designed to educate the public on all points concerning Empire trade. Since the demise of this Board these hoardings have been used by other government departments in connection with such campaigns as those for the relief of unemployment, and the clearing of slums. It does not seem inappropriate to suggest that suitable posters might be displayed on these hoardings for naval propaganda purposes.

The Stage.—Naval plays are by no means uncommon, but those like "The Midshipmaid" and "The Middle Watch" are only of limited propaganda value. What is really wanted, and its value cannot be overestimated, is the production of a spectacular play similar to "Cavalcade." The omission of almost any reference to the Navy in that epic has been regretted by many; it is not too late to remedy it.[2]

[1] Only a few months ago a certain newspaper reproduced an urgent plea for more cruisers, followed a few days later by an assertion that the Royal Air Force was now our first line of defence, and a demand that that Service should be greatly increased at the expense of the Navy and Army.

[2] "If the effect of the Navy's work could be brought home to the people of this country, they would appreciate far more what it did and what it should still be allowed to do. At present many people seem to think that the Navy did nothing at all. Those who saw "Cavalcade" will remember that it was represented by one comic naval officer; there was nothing else to show that the Senior Service took any part in the War." FROM THE DISCUSSION FOLLOWING A LECTURE ON "FREEDOM OF THE SEAS," PRINTED IN THE R.U.S.I. JOURNAL FOR MAY, 1933.

National feeling is the most susceptible of human passions, and Mr. Noel Coward has demonstrated well how it can be played on almost to the point of hysteria, while Mr. C. B. Cochran knows all that there is to be known about spectacular productions. Something of the atmosphere of Jutland has been put on the stage in "B. J. One" and it should not then be impossible to stage any form of naval activity. If the golden moment were chosen, a naval "Cavalcade" might have a vital effect in reconciling an ignorant electorate to a large increase in naval expenditure.[1]

The Screen.—Closely allied to the last method, this form of propaganda has perhaps even greater value, since its appeal is more universal. Attempts to produce naval films like "Hearts of Oak," and "Men Like These" have resulted in moderate degrees of success. These have, however, been completely outshone by such brilliant American films as "Hell Divers," which was a magnificent advertisement for the U.S. Naval Air Service. Our latest film, "Our Fighting Navy," pictorially excellent, was ruined by a poor commentary and inferior production. Luckily we have now reached a point where the British film industry can hold its own. With full Admiralty co-operation, it should not be long before a naval film is produced, which is both an unquestionable box-office success, and really good propaganda.

Broadcasting.—Although in a sense under government control, there is as yet no precedent for us to imagine that the B.B.C's programme could be exploited for purposes of propaganda in time of peace. The introduction of a naval interest into the entertainment side of the programme could, therefore, only be an occasional event, and would consequently be of little value. It is, however, reasonable to believe that, from time to time, a series of talks on the Navy could be arranged; and, if the speakers were carefully selected, it should be possible to raise interest in the series comparable to that recently taken in that on "Our National Character."[2]

Tattoos.—Only once has a searchlight tattoo been attempted by the Navy—at Whale Island in 1930. Despite the success of that production, and the immense propaganda value of the Aldershot and other tattoos to the Army, it cannot be considered that they are readily adaptable to

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[1] "Now let us couple the future of the Navy with the past of the Navy. The glories, and victories, and triumphs that are over, and the defeats that are over too. Let us drink to the ships; to those who built them, and those who sailed in them. Let us drink to the spirit of gallantry and courage that made a great Empire out of our small island, and let us drink to the hope that one day this Navy of ours, to which we owe so much, will find dignity and greatness and glory again." FROM AN IMAGINARY "CAVALCADE OF THE NAVY" WITH ACKNOWLEDGMENTS TO MR. NOEL COWARD.

[2] This was written before Admiral Richmond's recent series of talks.

naval use, nor have we any establishment which is able to spare the time and men required to produce a naval display of this character as a yearly event. In view of another development which will be considered as the next form of propaganda, this one is not recommended.

Pageants.—The beautiful night pageant, staged at Greenwich last year, should surely form the first of a series of annual productions on similar lines. It possessed the merit of originality, and of being staged within the Metropolis, while it did not require the huge space and elaborate production of a tattoo, since massed bands and extensive paraphernalia were not required. It would appear that such an annual show would be well worth the Navy's consideration.

Fleet Movements.—Naval reviews, such as that held at Spithead in 1924, are essentially "naval occasions"; they should not, therefore, become regular events, but be reserved for special propaganda. For example, were a review to be held this year, it might bring home to the British public the ridiculous size of the fleet, as compared with that which was mustered in 1914, or even in 1924.

Visits of ships to seaside resorts and other towns are a different matter. They are a welcome respite to the fleet in Home waters after intense exercise periods, and at the same time they are of inestimable value for showing the ships and the men who live in them to a vast proportion of the people who cannot visit the dockyard ports. As propaganda this may not demonstrate the necessity for a Navy, but in conjunction with other methods, it is of great value in raising a lively enthusiasm for the fleet.

Navy Weeks.—Originally started in 1927 with but one object in view —the provision of funds for Service charities—the annual Navy weeks have since developed the secondary object of propaganda. In an effort to attract a large number of visitors, various displays have been added to the initial idea of simply throwing open dockyards and ships to the public for one week of the year. As long, however, as the principal object of collecting funds remains, it is inevitable that the displays should be limited, since no part of their cost can devolve upon the Crown, and it is desirable that the expenses to be deducted from the gate-money should be as small as possible. Another hampering factor is the coincidence with the Home Fleet summer leave period. It is clear that if the primary object were changed to that of propaganda, production expenses within reasonable limits could be considerably increased, while the Home Fleet leave period might be deferred to a different time. Comparatively elaborate displays could then be arranged with the object of showing how the Navy serves the country both in peace and war.

Having surveyed the various methods of naval propaganda, their characteristics and possibilities of development, we must now consider what would be the necessary organization to work out the practical details and to put them into effect. As regards those methods which only involve the Navy—pageants, fleet movements, and Navy weeks—there can be no difficulty, since these are purely a matter of Admiralty policy, and it need not be made unduly evident that propaganda is intended. But methods which involve control of, or co-operation with, civil organizations are in a different category. In time of peace, government control of such organizations to promote propaganda—whether naval or not—would probably be resented as being alien to the Englishman's traditional idea of personal freedom, quite apart from international considerations. Co-operation would appear to be the solution, and for this an organization already exists in The Navy League. If it is to be really successful, however, that body requires a great deal more support from the Service than it gets at present. Working side by side, the Navy and the Navy League should further the Press campaign, assist in the production of suitable books, and co-operate with the B.B.C. and educational authorities with a view to introducing the proposed methods of naval propaganda. Similarly, a poster campaign might be introduced, and stage and screen persuaded to assist in their respective provinces.

The ignorance of the nation where the Navy is concerned is comparable to a heavy boulder resting at the top of a hill. It will require a big effort to overcome the inertia acquired by ages of apathy; but, once it is set rolling, it will rapidly gather sufficient energy to produce in the British public a lively interest in their heritage—the sea, and the realisation that it is to the Navy that they must continue to look for their existence and prosperity.

THE TASKS OF THE ARMY

By Lieutenant-Colonel A. Baird Smith, D.S.O.

In recent articles which have appeared in the Journal and elsewhere[1] various writers have dealt with the "tasks" of the Army, and in doing so have ranged widely over the subjects of organization and training; but they appear to have taken for granted that agreement is general as to what these "tasks" actually are. They seem to assume that, on the outbreak of any war in Europe in which, by treaty obligations, Great Britain may be involved, the first "task" of the Army will be to furnish and despatch an expeditionary force to the Continent, and that this force will consist wholly of troops belonging to the Home Army. They realize the present inadequacy of our military resources and establishments, so they endeavour to show in what way our meagre contribution can be made more acceptable to those allies to whom it may be offered.

The fact is, however, that even assuming that our voluntarily enlisted Regular Army is sufficient for all ordinary contingencies of small wars, or Imperial policing, it cannot of itself, even with all its reserves, hope to do more in a continental war than effect some local and temporary diversion to assist the operations of the conscript national army of some powerful ally. Anything on a larger scale would necessitate supplementing the Regular Army and the Territorial Army by another improvised levy on the Empire's man-power, in a fashion thoroughly familiar but at present in no way foreseen or provided for.

For such diversions to produce satisfactory results, the British troops that undertake them must, of course, endeavour to make up for their paucity of numbers by superior training and equipment. Yet the mere fact that potential adversaries are more numerous does not, in these days, imply that they are inferior in other respects; no monopoly can be permanently acquired of progress in the art of war. In the past, oversea expeditions as a form of so-called "British war," were undertaken on two assumptions: first, that the Army's training and equipment fitted it to be employed on general service anywhere and against any

[1] "The Tasks of the Army," by Lt.-Colonel C. E. Hudson, V.C., D.S.O., M.C., Nov. 1933, p. 773 and articles in *The Times* of 28th, 29th and 30th August, 1933.

enemy ; and, second, that the Navy's command of the sea was and would remain absolute, and not, as to-day, be qualified by a sort of "relativity." The modern problem of such oversea warfare is, indeed, very different.

The "tasks" which the Regular Army can be called on to perform are conditioned by the Army's size, its quality, nature or type, its training, and distribution throughout the Empire. Conversely, to a less extent, the nature and quality of the Army are determined by the "tasks" which political and military considerations have allotted to it in peace, or conceived for it in war.

Size

The Army's numerical strength is governed by the resources of a strictly limited recruiting market and the human material it affords, as well as by the equally limited military budget. A shrinkage in the market can only be met in two ways ; either by lowering the physical standard of recruits, or by increasing the monetary inducements offered to them. The second expedient is naturally a last resort, hardly to be considered in present-day circumstances. It is difficult to decide which of these two restrictions of the Army's size is the most obdurate ; the best that can be said of them is that they remain, for the present, calculable.

Quality

As to the human material, the system of enlistment does not, of course, obtain the highest physical type of recruit ; and raising the standard lowers the intake. The economic restriction of the market is not likely to be voluntarily removed, so long as peace is preserved. On mobilization, when the Army at home absorbs the Reserve, it at once becomes, in quality, a counterpart of the Army serving abroad ; but having young soldiers and older reservists mixed together in its ranks, it is neither so homogeneous nor so evenly trained as the latter. If it is to be assumed that any expeditionary force must invariably be organized in, and proceed from these Islands, then these qualitative defects must be accepted ; but they will tend to detract from the value of any special mechanical advantages the force may possess.

Type

The terms " Home Army " and " Foreign Service Army," convenient enough in discussing reliefs and quarterings, have little relation to the real nature and type of the Regular Army as a whole. Being naturally homogeneous, and only temporarily subdivided, the accidents of its local situation do not necessarily alter its pervading characteristics. The arbitrary division of its personnel into " types " must produce confusion and unreality, by making distinctions without difference—reminiscent

of not very distant days when a rifleman differed from a fusilier, or a hussar from a dragoon, not in their weapons or tactics, so much as in their full-dress uniforms. The modern soldier, particularly the foot soldier, fully equipped for war, whether in Flanders or for an Indian frontier campaign, should be considered one and the same; and if originally trained for the "maximum" task, he should be capable of adjusting himself to others easier or different. The real problem lies in imparting the "maximum" training to every man.

Experience has shown that even when a fully prepared expeditionary force is maintained in home garrisons, it is not possible to ensure that it alone will suffice for major operations in a continental war; sooner or later it must be strengthened by portions of the Army abroad, till one becomes merged in the other. So long as there is no intrinsic difference of "type" or quality between the parts of the Regular Army, wherever quartered, this merging upsets nothing but the routine reliefs of oversea garrisons; which must in any case be interrupted or suspended in time of war. Experience also shows that the limit of these reinforcements is speedily reached.

There can be no question of the voluntary system of enlistment producing two "types" of British Army—one for foreign service and the other for home; the competition of the latter in the market must inevitably bankrupt the former. Where a system of national conscription exists, as in France, whereby the services of sufficient soldiers can be obtained for nothing, a colonial army, if sufficient inducements are offered, can be raised, and permanently quartered abroad. Any proposals, such as the formation of "types" of "tank divisions" to be kept for service at home, which would discriminate in the terms offered to recruits, must adversely affect the general market, besides complicating the military budget.

The conception of the Army serving abroad as a "general weapon of defence,"[1] encourages the idea that it is of a peculiar "type," in some respects a lower one than that of the Army at home. But occasions have frequently arisen when, as a measure of precaution or in a sudden crisis, the balance between the two parts has been upset, and a partial fusion has taken place; so that any rigid distinction in their respective training, equipment or armament might have produced, in war, confusion and disorganization. Expeditionary forces have, in the past, proceeded from the Army abroad, as well as from that at home; the question of "type," if it arose at all, being locally adjusted. Nowadays, such adjustments could not be left till the outbreak of war.

[1] *The Times*, 28th, 29th and 30th August, 1933.

If the Regular Army, wherever it may be quartered, is to conform to a standard "type," the exact nature of this "type" must, of course, be decided for the present, and modified only in accordance with the progress of military science. The short peace-time training of its personnel, the constant breaks and interruptions of its training periods and the limits of capacity of both instructors and instructed, all indicate that, if great results are desired, these must be sought in the fewest possible necessary directions.

Training

The British practice of voluntary enlistment, and the Cardwell system which deals with its products, may be regarded as inseparable, so long as Imperial requirements continue as at present. As regards the production of "superfluous infantry,"[1] the system, of course, is only responsible for providing men, and apportioning them to the various garrisons at home and abroad. It would, however, be difficult with the narrow opportunities provided by the system, to obtain a superfluity of anything; and impossible to get soldiers for whom there is no use. There may not be time or means for training all these men as specialists, and a large percentage may pass finally into the Reserve with little or no mechanical knowledge; but in view of the incalculable demands of some future national emergency they should be hoarded with a miser's care. The Regular Army quartered in Great Britain, in the short season available, can only be patchily trained, though it runs the risk of being over-inspected; and although its "mechanized component"[2] may be described, with some justification, as "skimped," it would be a misuse of terms to describe any of its infantry as "superfluous." Yet a suggestion has been made that this supposed superfluity should be added to the "mechanized component," and that the Territorial Army could furnish a supply of "man-power element" in case of emergency. Emergency being the kind of thing that usually precedes all British wars, this arrangement would amount to a permanent lien on Territorial infantry units; which would not only have to be kept at a "man-power" establishment, but would be unable to reckon on remaining whole on mobilization. A more thoroughly vicious makeshift could hardly be devised.

At present the insistent demands of various specialist trainings make such inroads on battalions at home that their commanding officers suffer from a chronic dearth of men, and lack of time and opportunity to train the few that are left to them in their "ordinary" work. On mobilization more man-power becomes available; but if "tank divisions" demand

[1] Ibid. [2] Ibid.

all the " tank-trained reservists,"[1] it is difficult to see how " ordinary " battalions depleted to the point of extinction, are to be satisfied.

Another proposal[2] is discussed; to reduce the establishments of infantry units stationed abroad by using their "superfluous" men to swell the " mechanized component " in this country. Probably this expedient could only be tried once; since it is very unlikely that, if Indian establishments were recognized as safely reducible, their superfluous men would be allowed to figure elsewhere in the military budget. These establishments, moreover, in view of possible political changes of far-reaching character in India, should be the last to suffer from such a rash experiment.

So long as a British garrison is maintained in India, its "maximum" training for war, in spite of climatic, and quartering difficulties, could be as well carried on there, as anywhere else. The man-power element of the army in India, far more mature than its counterpart at home, should not be regarded as of an inferior "type" any more than some of it should be considered " superfluous." The possibility must always be borne in mind that this British garrison may some day find itself between a frontier in flames and an India in revolt; faced by what has been termed " single-handed fighting," dependent entirely on its own power and resources. Such a situation would involve it in a war whose nature and circumstances are not hard to imagine, and which, at any rate, will be no less "real" than any the Home Army may be called on to undertake.

The "ordinary" infantry—by which, presumably, is meant the rifle-armed battalions still being taught to fight on foot—though relieved of some of its personal burden, is becoming overweighted with an increasing variety of new weapons, most of them designed for use in close support of other troops in battle. The use of these weapons, as has been justly pointed out,[3] demands an elaborate combination in action, probably beyond the powers of small battalion staffs to achieve. The short time available to train young soldiers as specialists to handle and fight these weapons, and the fact that on transfer abroad the specialists and their weapons are often parted, must give to the whole organization a fluctuating and unstable character. Even if it were somehow possible to transfer the bulk of these weapons to " support battalions " specially formed, these battalions must either be exempted from the usual foreign reliefs, or proceed abroad as " ordinary infantry," or take the whole of their weapons with them. By the first arrangement, the relief system would be put out of joint, by the second the newly trained specialists would be

[1] The R.U.S.I. JOURNAL, November, 1933.
[2] *The Times*, 28th, 29th and 30th August, 1933.
[3] Ibid.

lost, and by the third a great increase in the expenditure on new weapons would be necessary. There would still remain the moral problem—how to differentiate between infantry which, though considered "ordinary," might be used on any part of the battle front, and other infantry which habitually remained in support.

Apart from the question of expense, there seems to be no reason why the Army stationed abroad, with plenty of time and opportunity for training, should not be a school for every kind of new weapon or new machine, even if this would entail transfers or augmentations in instructional and technical staffs. In due course the trained specialists of the Army serving abroad must pass into the Reserve; on mobilization they would join units at home, and help to obviate the necessity of training others at the last moment.

All these new weapons demand new schools of instruction in the tactics of their particular battles; their cost must weigh heavily in the military budget. If more money cannot be granted, then only economy in some other direction can provide it; but this economy should never be in man-power. Training, for all arms of the Service, tends to grow steadily more varied and specialized. As an example of the extreme complexity introduced into warfare by the multiplication of weapons and machines, the theory of the "tank battle" may be quoted. The tank, originally designed as a sort of Roman *testudo*, to flatten out a path for assaulting infantry—a task it could only perform under certain restricted conditions—is to-day described as an arm of "manœuvre and opportunity."[1] A "tank battle" may either be one of tanks alone, or a combination with the battles of other arms; but the tank itself requires constant artillery support, and any results from its action must be confirmed by troops of a different "type." For the tank's close support, machine guns and anti-tank guns are said to be indispensable—because tank is not designed to fight tank. If, moreover, this close support should be lacking, the tank could not hold what it had temporarily won; nor could it get a chance to rally and re-organize. To provide this indispensable support, the theory demands yet another "type"; a sort of mobile, mechanized, machine-gunned and anti-tank gunned formation, which it would be highly misleading to describe as "infantry." Lastly, the tank when at rest, requires someone to protect it.

The writer of the article in the JOURNAL, describing the nature of his proposed "tank division," evidently has all these activities of tank units and their supports in mind; and would embody in the division itself artillery, infantry, engineers, etc., as required—the only proviso being

[1] Ibid.

that all these must be equally mobile and mechanized. Thus the divisional training, for its " tank battle," becomes ever more and more complex.

Tasks

The " tasks " for which the Regular Army is maintained have been variously stated. The Army is termed an Imperial Police Force or a Defence Force; at the same time part of it is distinguished as " expeditionary "—to be used as a kind of pawn in the game of European diplomacy, in balancing the scale of the Great Powers, or in lending substance to the shadows of international " pacts." An army, however, is not a police force; nor can its quality be simply defined as defence, if it is ever to fight outside its homeland. A great part of the Empire " polices " itself, and also maintains at least the cadres of its own Defence Forces; but wherever the Regular Army is quartered abroad, it is there primarily for military considerations. Though available as ultimate support of law and order, it cannot be regarded as a possible substitute for the machinery of civil government, or a normal guardian of the public peace. The reasons which determine its distribution are not easy to define, though none the less real. For example, the garrisons of Egypt or India, by their mere presence, achieve a military prestige out of all proportion to their strength, and one which only knowledge of the peculiar local conditions makes comprehensible. Yet to assume that, for this reason, these garrisons are adequate for all possibilities would be rash indeed. The idea that a small expeditionary force can be raised and used on occasion, for any of the above purposes, ignores realities; admittedly the Army of to-day, heavily burdened with its Empire duties, has no margin to spare for such extraneous " tasks "; its present deficiencies are no secret, either to possible enemies or probable allies.

Any part of the Regular Army which might be held liable to embark in an adventure involving conflict with the troops of a first-class Power, must of course have training and weapons suitable to its " task." But with the bulk of the mature personnel always abroad, it is almost impossible to maintain a Home Army of a " type " distinct from the remainder of the forces, or to endow it with some definite strategic mission.[1] In peace time, the mission must remain entirely indefinite. The era of British small wars is probably not yet past, even though the Empire has ceased to expand; but India may one day be left to fight her small wars herself. In the meantime it seems certain that the chief task in such wars will fall on the most adaptable and flexible arm, the infantry; that task taking the form of occupying some troublesome tribal territory, of pacifying it and opening it up. Given necessary

[1] Ibid.

Air Force co-operation, " ordinary " infantry will probably suffice ; but if, as suggested, all infantry receives " maximum " training, any " type " of expedition could be quickly organized.

From the foregoing considerations it appears that the Regular Army is not only in danger of being over-specialized, but of being stretched, like a small garment on a stout person, to fit Imperial responsibilities far too great for it. Under such circumstances, where the chief remedy, which is a matter of politics, is not within the competence of soldiers, the wisest preparation for the Army's indefinite war-time tasks is to simplify and standardize as much as possible ; to avoid multiplying types of units, and over-specializing them, while aiming at the greatest common measure of efficiency. A careful study of the peace-time tasks will conduce to a clearer idea of how similar tasks may be performed in war, or others substituted for them ; and in this way a just sense of proportion and of military possibilities may be attained.

NIGHT ATTACKS BY AIR

By "SYPHAX."

THE aim of this article is threefold. First, to give a brief survey of the night air attacks carried out both by the enemy and ourselves during the War of 1914–18, and to endeavour broadly to indicate the reasons for their failures and successes, and give some estimate of their effect on the conduct of the War; secondly, to note the evolution of our present organization and review the position as it exists to-day; and finally to attempt some forecast of the lines which future developments may be expected to follow.

NIGHT ATTACKS DURING 1914–18

Enemy Air Raids.—The first night air attacks of any importance were those carried out against this country by the airships of the German Naval Air Service, assisted later by those of the German Army. The actual scale of these attacks, which amounted to fifty-three raids in three and half years, was not great. Over the whole period it represents an average of little more than one a month. Nevertheless, the novelty of these attacks and the feeling of helplessness caused by our inability to deal with the raiders produced at first an important moral effect. It was feared that they might cause heavy casualties to the civil population, and serious damage in London and other important centres. Air navigation at night, however, was at that time in its infancy, and it was soon apparent that the airships were only to be expected during settled weather conditions, when the sky was clear and they were assisted by the light of the moon. At first, the only available defences were the A.A. guns and searchlights. The science of A.A. gunnery was not, at that time, very highly developed, and the guns did not succeed in destroying any of the airships, although in August, 1915, "L.12" was hit by a shell over Dover, and had to alight in the Channel. She was towed into Ostend, and had to be completely dismantled. In March, 1916, "L.15" was damaged over Purfleet by an A.A. gun and came down in the sea on the way home, and in September of the same year "L.33" was damaged by a shell before she was shot down by Lieutenant Brandon.

Although a beginning had been made on Salisbury Plain before the War, night flying in heavier-than-air craft was in its infancy. Until well into 1915, the poor performance of our night-flying aeroplanes made it difficult if not impossible for them to intercept an airship even when they had succeeded in sighting it. In particular, the airship, by releasing ballast, was often able to climb away from the aeroplane. However, aeroplane performance rapidly improved, and by the summer of 1916 it had reached a point at which interception, once the airship had been sighted, became comparatively easy. Incendiary bullets had been devised, and these gave a very good chance of igniting the hydrogen gas from which the airships derived their lift.

At first, the defence suffered from weakness caused by the disposition of the defending aeroplanes in twos and threes all over the country; for instance, it was the practice to station two or more aeroplanes near an important factory or arsenal in order to guard it. But, in 1916, it began to be realized that a highly mobile weapon such as an aeroplane need not be stationed at a point in order to defend it. Moreover, it became clear that this dispersion handicapped the defence by increasing the difficulties of administration and particularly of rapid communication, the importance of which in air defence is obvious. With the realization of these facts, Home Defence squadrons of aeroplanes began to appear, and from now onwards the airships incurred grave risks whenever they crossed our coasts on clear nights. They therefore began to choose dark and even cloudy nights for their operations, with the result that they were often uncertain of their whereabouts, and frequently dropped their bombs at random or on East Anglian towns and villages. Nevertheless, darkness did not give the expected measure of protection to airships attacking defended zones, as their great bulk and comparatively slow speed made it easy for the searchlights to pick up and hold them. They were gradually forced to operate in worse weather and at greater heights. This policy culminated in the famous "silent raid" of October, 1917. On a dark night with a rising northerly wind, a squadron of eleven airships crossed the North Sea to attack England. Their objectives were the industrial centres of the Midlands, and only one crossed London; but they were very uncertain of their positions. The defence did not switch on searchlights or fire guns, and the airships, flying at a great height, failed to realize where they were. They dropped a certain number of bombs, doing very little damage. The northerly wind freshened to a gale and they were driven far South out of their course on the return journey. Five airships were lost; one in Germany; three after struggling against the storm over the battlefields of France; and one, after running out of fuel and

attempting to land in France, broke away with some of its crew still on board, and was never seen or heard of again. It must have come down in the Mediterranean or the Sahara Desert. This disaster marked the end of the night attacks by airships on London, though a few more attacks were carried out against objectives near the East coast.

Night attack by airships on this country ended in complete failure as soon as the defence had been properly organized. The Zeppelins failed because they were too large and slow to evade the intercepting aeroplane, too vulnerable to defend themselves successfully against it when attacked, and insufficiently airworthy to be able to make effective use of bad weather for surprise and concealment.

By the beginning of the year 1917, the Germans had begun to realize that the airships on which they had relied for their night attacks upon this country might in the near future find themselves unable to penetrate the defences. They therefore turned their attention to the development of night raiding by aeroplanes. They were in possession of bases in Belgium from which aeroplanes could reach London, but the industrial areas of the Midlands and the North, which had often been attacked by the airships, were beyond their range. They produced a number of large twin-engined aeroplanes, of which the best known was the "Gotha," which could carry about 1,000 lbs. of bombs. In 1918 they built some "Giants," which were really enormous aeroplanes for their day, the largest of which had five engines, and a span of about 180 feet, and were able to carry 3,000 lbs. of bombs. All these aeroplanes were slow, having a cruising speed of about 70 miles per hour, and a full speed of probably not more than 90 miles per hour. Their operations achieved a considerable degree of success, and forced us to withdraw fighter squadrons from the Western Front for a time in order to deal with them, and also made it necessary to create new squadrons of specialized night fighters. These defensive measures achieved their object, and the last German night air attack on this country took place in March, 1918.

The collapse of the night attacks on this country cannot, however, be satisfactorily explained solely by the effectiveness of our defences. The Germans do not appear to have realized the importance and vulnerability of the London dock area or the serious moral effect of sustained and vigorous attacks on London itself. They do not seem to have had any hope of producing a decisive or even a serious effect by bombing London, but merely to have regarded such raids as a diversion to keep a considerable number of aeroplanes and guns tied down in this country. If this were their object, it achieved, as we have seen, a considerable degree of success. In 1918, we had over four hundred aeroplanes in the Home Defence Brigade, and hundreds of guns and

searchlights were required for the A.A. artillery organization, in order to defeat the attacks of the raiding aeroplanes, which probably never exceeded fifty in number. A further explanation of the half-hearted nature of the German attacks may be found in the fact that the successful conduct of night air attacks requires a high degree of morale on the part of the crews of night bombing aeroplanes, and there seems to be little doubt that by 1918 the morale of the German airmen had been seriously lowered; most of their best pilots had been killed or were needed in the main theatres of war.

We may, therefore, conclude that the history of the night air attacks on this country during the late War would be likely to lead to an optimistic view of the power of the defence to deal with such attacks, if it were not remembered that the Germans never made any attempt to produce a decisive, or even a serious result. Their conduct of the operations stands as an excellent example of a successful diversion, but it cannot be considered to represent a vigorous and determined attempt to achieve decisive results by means of an air attack on this country.

Allied Night Operations.—We have seen that, had the Germans but realized it, a target of unique importance was exposed to the attacks of their aircraft. No target of comparable importance was, however, exposed to attack by us, and until 1918 our own night operations were, therefore, confined almost entirely to attacks of a large number of minor objectives behind the lines of the Western Front. As we had a wide choice of small targets, the defence was unable to concentrate in order to meet our attack, and we suffered comparatively few casualties. On the other hand, in such circumstances it was not to be expected that our night air operations would produce any important results. In the more distant theatres of war, night operations on a large scale were never undertaken.

At the end of 1917 it was decided to attack the industrial centres of the Rhineland as a reprisal for the continued bombing of London and our own industrial areas. To this end, early in 1918, the Independent Air Force was formed. It was removed from the command of the Commander-in-Chief, British Expeditionary Force, as it had no concern with the strategy of the operations on the Western Front, and was placed under the control of the Supreme War Council. Its aim was to interfere as much as possible with the industrial output of the Rhineland, in which district, amongst other considerations, a very large proportion of the coal and steel production of Germany was concentrated. The Independent Air Force contained a proportion of night bomber squadrons, which were considered to have proved so valuable that, during the latter half of 1918, a large number of new night bomber squadrons destined

for this task were formed. None of these were ready to go overseas until a short time before the Armistice, and others were still training in this country when the War ended. Among the latter were several squadrons of large four-engined Handley-Page aeroplanes, which would have been able to reach Berlin from East Anglia, or from behind the lines of the Western Front.

Night air attacks on Germany were never, therefore, carried out on a large scale, and we can only conjecture what the result might have been. We do know, however, from both official and unofficial German writings that the night attacks on the industrial centres produced a very considerable moral effect and, in addition to interfering seriously with the manufacture of all kinds of munitions of war, were one of the factors which contributed to the collapse of the German nation in the autumn of 1918.

The French employed their aircraft during the War to a very large extent on army co-operation duties. Towards the end of the War, however, they began to devote considerable attention to the development of night bombing. Since the War, the French have given much thought to the question of night air attacks, and have placed on record their view that " night bombing is the bombing attack *par excellence.*"

To conclude this brief summary: the lesson that we can learn from a study of night attacks in the last War seems to be that, as it went on, they became increasingly important, and certainly both the French and ourselves in 1918 were greatly augmenting the numbers of our night bombers. The War, however, came to an end before any large scale night attacks on important objectives had been attempted, and we can only imagine what the results might have been.

The Present Position and Probable Future Developments

Towards the end of the War some very large aeroplanes were produced, both by the Germans and ourselves. These great aircraft were too large and too slow to be able to penetrate defended zones in daylight, and, therefore, they were employed as night bombers, for which task they were peculiarly well fitted. Formation flying at night without lights is not a practicable proposition and, even if it were, it is more than doubtful if the aircraft comprising such a formation could successfully support one another in the dark against an attack by fighters. The night bomber, therefore, has to operate alone, and must be self-contained and self-supporting. It must be large enough to carry a pilot, navigator, bomb aimer, and sufficient gunners to enable it to produce an all-round effective defensive fire. It must have a fairly slow landing speed, and must carry a worth-while load of bombs. For these reasons

it has been our policy since the War to build large aeroplanes for use as night bombers. The day bomber, on the other hand, has developed into a very fast, lightly loaded aeroplane, with a fairly high landing speed, and no night flying equipment. We have thus arrived at a rigid division of our bombers into day and night flying types, a system which suffers from several serious disadvantages. The main object of night air attacks is to maintain continuity, by sustaining the attack and not allowing immunity to the target during the hours of darkness. If the day and the night were each of twelve hours duration throughout the year, such a rigid division might not much matter, and the bombing force might well consist of equal numbers of each type. The only drawback would be the hiatus which must occur in the operations at dawn and sunset. The last night bombers must withdraw from enemy territory before the first light, and the first day bombers cannot leave the ground in formation until they can at least see one another. So again at sunset, the last day bombers must reach their home aerodromes before it is too dark for them to land, and the first night bombers cannot approach the defended zones until they are obscured by darkness. The length of the hiatus depends upon the distance between the aerodrome and the objective. This disadvantage, however, is unimportant compared with the serious difficulty caused by the fact that in these latitudes the hours of darkness and daylight vary so very greatly according to the seasons. In mid-June, darkness can only be counted upon from 11 p.m. to 3 a.m. B.S.T.—a bare four hours of night. A bombing force, rigidly divided into day and night bombers in equal numbers would find its day bombers more than fully employed, while its night bombers would scarcely be able to operate at all. Similarly in mid-December, when the hours of daylight only extend from 8 a.m. to 4 p.m. G.M.T.—eight hours of daylight and sixteen hours of darkness—such a bomber force would again find its composition ill-balanced.

Recently, however, influences have appeared which are tending to check this process of evolution into light fast day bombers and heavy slow night bombers. The threat of the multi-seater fighter, which requires a movable front gun in order to meet it; the realization that very light bomb loads are uneconomical in personnel and material, and the desirability of at least being able to take off and land in the dark in emergency, are all tending to make the day bomber larger, and to endow it with some of the qualities needed in a night bomber. Similarly, the demand for better performance, particularly higher speeds and higher ceilings, for night bombers is tending to make them smaller and to restore to them some of the qualities required in a day bomber. The "Sidestrand" day bomber and the new "Heyford" night bomber are very similar. As regards aeroplanes, then, the present position is that,

while we still have the rigid division into day and night bombers, the respective types which have been evolving along divergent lines are now beginning to come together again.

As regards instrumental aids to air navigation and bombing and our grasp of the problems involved, there is no doubt that we are standing to-day on the threshold of a new era. The automatic pilot, the art of " blind flying," navigation by means of directional wireless, and improved bomb sights are all factors of the greatest importance, the effects of which cannot at present be foretold with certainty. A new technique of " cloud flying " is appearing, which is of the highest value not only to military aviation, but to the commercial airways of the world. The problem of landing in fog is being studied in all countries which attach any importance to aviation, and enough work has been done to show that it is not by any means impossible of achievement. The general effect of all these new factors is to minimise the differences between day and night flying, since aircraft and personnel capable of operating in clouds and fog in daytime will have no difficulty in operating at night. It will tend to make the operations of aircraft increasingly independent of the accidents of weather or the quality of the visibility, and therefore to facilitate continuity of attack under all conditions of light and weather. The need, therefore, for specialized aircraft with additional equipment and special training of personnel for the purpose of night flying should tend to disappear. We do not have specialized trains or cars or ships for work at night, and it is difficult to believe that the specialized night-flying aeroplane is anything more than a phase in the evolution of military aviation.

It seems probable that, though air navigation by night will cease to require special equipment, there will always be tactical differences between day and night air attacks. Aircraft will almost certainly continue to fly in formation by day, even in clouds, and while it may be that formation flying at night, at any rate in bright moonlight, will become possible and advantageous, it is probable that for a considerable time to come night bombers will, as a rule, continue to operate singly. The choice of objectives for night bombers is also more restricted than that for day bombers. It is unwise to select objectives for night bombers that are not large and easily found, and for this reason night air attacks are likely to be confined, as a general rule, to conspicuous targets of major importance. That this should be so is fortunate for the defence, as it enables the available searchlights, which are the *sine qua non* of night air defence, to be concentrated in the vicinity of the most important centres.

Conclusion

We have surveyed very briefly the night air operations undertaken during the last War, and have seen that hostilities came to an end before such operations on a large scale were undertaken. It is, indeed, surprising, not that so little, but that so much, was achieved, especially when we consider that even at the beginning of 1915, all the belligerent nations possessed between them no more than a handful of military aircraft, none of them effectively armed, and that a night flight in an aeroplane was a daring personal achievement rather than a normal operation of war. We have looked at the present position and glanced at the future, and it is clear that the art of flying in clouds, darkness and fog has made great strides recently, and is in process of rapid development. New aids to navigation have appeared, the ultimate effects of which are incalculable, but which have already had a profound influence in freeing the operations of aeroplanes from restrictions formerly imposed by lack of visibility.

Though prophecy is notoriously rash, we are perhaps on safe ground in asserting that the importance of night air attack will certainly not diminish, and that the difficulties with which it is at present attended will grow less with the passage of the years, and perhaps disappear altogether, taking with them the specialized aircraft, equipment, and training which are necessary at present.

THE UNCONQUERABLE MIND

A STUDY OF A NIGHT OPERATION

By "B. BUCKLEY."[1]

"The special responsibility of commanders and staffs in connection with night operations is to ensure that:—

(i) The plan is simple;

(ii) thorough reconnaissance by day and, if practicable, by night is carried out. All arrangements . . . must be worked out with the utmost care."—F.S.R. II 97/1.

"The principal duty of a commander is to make decisions . . . In war, a commander may find that his attention tends to be distracted by physical fatigue, his mind to be inspired with misgiving . . .; if he possesses the essential attributes of command he will remain unshaken, and by his knowledge and determination will compel the attainment of his object."—F.S.R. II 5/2.

IN peace there appears to be a tendency to place an undue value on the technique of war at the expense of a proper appreciation of its psychology. Yet, technique or no technique, it is the spirit of the commander which has so often in the past turned, and will again in the future turn, the balance between success and failure.

Although, where exercises are well conducted, one sees attempts made to keep the solutions on "practical" lines, and to discount any system which classifies solutions with regard to the nearness of their approach to the requirements of the manual, nevertheless the manual remains, in effect, the criterion by which all are judged. Indeed it is difficult to see how this can be avoided. One cannot say to a hypothetical "Smith":—"Your solution is good, inasmuch as it is practical and violates no principles of war nor any of the instructions of the manual. Nevertheless you can receive no credit for it, for your psychology is such that you are not capable of making such a decision in war, much less of putting it into effect." For, apart from the more obvious objection, "Smith's" psychology may be such as to make the words of peace more difficult than the deeds of war.

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[1] The author acknowledges, with thanks, assistance from many sources.

This being so, it is mildly surprising to find how little the psychological aspect, admittedly difficult to test, is glossed over in the use which is made of a study of military history. If we may not test, surely we should study. Apart from that type of study of military history which may conveniently be designated "narrative" history, which is usually of more interest than value, and which calls not so much for a student of war as for a reader of history, we are encouraged to concentrate on campaigns, and on incidents in them, which show the evil of disregarding the instructions of the regulations, and the good which follows adherence to their precepts. Not infrequently thoughts and reasoning are attributed to long dead captains of the military art which one has difficulty in believing could have all occurred to any but a superman. And, while all this tends to glorify the book, it does not go to the root of the matter, which is the man—not his manual.

Now while it is not the intention of the author to belittle the importance of military text-books, nor, indeed, to decry their necessity, it is suggested that, from time to time, military history might be made to serve the purpose of rectifying the balance between the relative importance of psychology and the technique of war; that we might with advantage study, not read, some action in which the manual is transgressed and replaced by the unconquerable mind of the commander. Such an action is that of the 11th Infantry Brigade of the 4th Division, IIIrd Corps, on the night of 12th–13th September, 1914, and this is a rough outline of what happened. It is a story of a night operation, and when the student has read and grasped its essential features, he should turn to the manual to find the technical lessons, and to himself for the other—and main—lesson of this incident.

It will be recalled that the first troops to cross the Aisne from South to North in September, 1914, were those of the 11th Infantry Brigade. Sir John French's plans for the advance on 12th September included the crossing of that river. The IIIrd Corps had been directed upon the ridge at Venizel.[1] By about 3 p.m. the Divisional Cavalry had reached the heights overlooking the river, while the leading infantry, the 12th Infantry Brigade, had reached Septmonts. At that time the Germans were still occupying the southern bank.

At nightfall the situation was that on the right of the IIIrd Corps were the 3rd and 5th Cavalry Brigades in an area which excluded Vailly, but included Chassemy–Ciry Salsogne–Condé sur Aisne. The IInd Corps was behind the cavalry in an area which included Brenelle–Braisne–Chacrise–Serches. The relevant portions of the IIIrd Corps itself were disposed as follows: the 12th Infantry Brigade, finding the advanced

[1] For the full narrative of the crossing see Official History, 1914., 3rd Edition, p. 379 and Maps 34 and 35.

guard and subsequently the outposts, was about Venizel–Billy sur Aisne with reserve at Acy; the 11th Infantry Brigade was at Septmonts, with the 10th and 19th Infantry Brigades behind it at Bucancy; the 31st (Heavy) and 28th (Field) Batteries were in position East of Septmonts. On the left of the IIIrd Corps the 43rd French Division were in and about Soissons.

Before dark the advanced guard—12th Infantry Brigade—now finding outposts, had pushed two companies forward into the village of Venizel and, as a result of this advance, the Germans had attempted to blow up the bridge and had retired to trenches on the northern bank. The Brigade had at this time covered some eighteen to twenty miles in rain over muddy roads; it had twice deployed, and the troops were wet through, tired and hungry, having had no food since 5 a.m.—nor was any food now available. Such little information as was to hand tended to show that the Germans were continuing their retirement. The outpost commander had reported that the bridge at Venizel had not been destroyed by the retreating enemy, but was only damaged. It was still capable of taking both infantry and cavalry in file, but it was commanded by trenches on the northern bank. As far as was known, all the other bridges over the Aisne were impassable, except that at Condé, which was strongly held.

At Venizel the Aisne is some sixty yards broad and unfordable. At this point the river wanders to the South side of the valley and passes under the steep slopes of the southern heights. To the North, stretch the flat and open meadow lands of the valley itself, devoid of cover, and for the mile and a half of its breadth commanded by the Bucy le Long spur, which forms the skyline. A single road leads from Venizel to Bucy, with numerous tracks and paths branching from it to the East and North-East. The general conformation of the ground was such as to deny to us artillery positions on the South side of the river, from which we could effectively reply to the enemy guns which covered the valley at short range from the northern heights.

So much for a brief description of the scene of action. When we come to study the action itself, it will be found to embrace every feature of a night operation from reconnaissance to consolidation. Its execution, especially in view of the condition of the troops at the time, must make the manual shudder. About 5 p.m. on the 12th, the exhausted battalions of the 11th Infantry Brigade were ordered to halt and obtain food in Septmonts, preparatory to pushing on to seize the crossing at Venizel that night. As we have seen, eighteen miles had already been covered, through mud and rain, in the face of an active and unbeaten enemy, and for the younger generation which has not yet experienced the moral and

physical effects of prolonged operations in the field, it is, perhaps, difficult if not impossible to appreciate the cumulative results of bad weather, bullets, and a shortage of food: the first and last have often been too much for many of us, even in peace. On this night Septmonts yielded but little to eat, but the halt was welcome.

The Brigadier had already been down to Venizel on the back of a motor-cycle. He now sent out a reconnaissance party. One officer was responsible for reconnoitring the route forward to the bridge and, on return, was to guide the column. Another was to ascertain the condition of the bridge and report. A third was to remain in observation of the crossing and to endeavour to find out if the trenches opposite to it were held. A local guide was provided, but subsequently lost. This reconnaissance, therefore, covered the stage of the night march only—here the manual stirs uneasily!

At about 9.30 p.m. the bridge was reported passable by infantry in single file at two paces distance. An hour later the column started with the Brigadier acting as guide, the officer detailed for that duty being at that time unavailable. Towards midnight of the 12th–13th September the column reached Venizel, having covered some three miles in ninety minutes in continuation of the full day's march which had brought it earlier in the day to Septmonts. On arrival at the village, the officer who had remained at the bridge reported that the enemy appeared to have withdrawn. Some idea of the weather conditions under which the march had been carried out may be gathered from an unusually descriptive extract from a war diary: "amid sheets of rain and a howling gale the exhausted troops, without food since 5 a.m., to whom extra ammunition had been issued at Septmonts, staggered over the hill and the three miles to Venizel, not caring whither or why they went, driven on by the determination of their commander." Here indeed had mind conquered mind, that mind might conquer matter.

While the main body of the Brigade remained halted in the village, its advanced guard, finding the trenches on the northern bank empty, filed across the bridge and formed a covering party just beyond it. As soon as this bridge-head had been formed, the remainder of the Brigade crossed over and assembled on the northern bank in mass. This movement was controlled by officers at the bridge, the troops being guided to their positions on the other side of the river. By 2 a.m. on the 13th the crossing was completed.

During the time that the Brigade was in process of assembly the Brigade Commander issued orders personally to an officer detailed by one of the battalions to take a patrol out to "the right hill," meaning the one North of Ste. Marguerite: this patrol turns up again later on

in the story. In order to hold the crossing which had been effected, it was, in the opinion of the Brigadier, necessary to occupy the high ground above Bucy le Long. While the Brigade was being assembled on the northern bank he called a conference of battalion and company commanders and issued some such verbal orders as these: "the enemy were seen retreating from Soissons in the evening, and I expect their rearguards are on the heights above Bucy le Long. I intend to gain a footing on these heights to cover the passage of the 4th Division to-morrow. In an hour's time you will see three spurs faintly against the sky. The right spur will be taken with the bayonet by the 1st Rifle Brigade, the centre by the 1st Hampshires, the left by the 1st Somerset. The East Lancashires will be in reserve behind the centre. Each battalion will send out an officer's patrol to the spur it is to capture. There is to be no firing."

Here, I think, the manual finds itself on the horns of a dilemma, torn between appreciation of simplicity and disapproval of omissions of what it has stated to be essentials. Let the student detect these omissions, and in doing so bear in mind the circumstances under which these orders were issued. Possibly his investigations may lead him to the conclusion that extreme simplicity is more easily digested food for tired men than the elaborate diet prescribed by military technique, a diet which, in circumstances much less exacting than these, might well lead to mental nausea.

At 3.30 a.m. battalions moved off independently to start a night advance of some two and a half miles, to be followed by a night attack up slopes which might, for these tired men, with truth be described as precipices. The Brigade had not waited for the return of its officer's patrol and had, therefore, moved in entire ignorance of what was in front of it. The formation in general use was column of route with an advanced guard of one company about fifty yards ahead of the main body.

Shortly after moving off the advanced guard of one battalion encountered some men moving towards it, and an order to charge was given. At that moment, however, the rustle and squelch of the advancing column was momentarily drowned by the sound of a heavy fall and a volley of oaths. The "enemy," recognizing the familiar words, succeeded in countermanding their opponents' order to charge. The patrol had rejoined! It reported having moved out on the main Venizel-Bucy road and then struck out half-right along one of the numerous tracks which exist in that part of the valley. On reaching the Bucy–Condé road it had turned right-handed and had proceeded in the direction of Ste. Marguerite until it met a road block, probably just East of Le

Moncel. Anticipating that the enemy were in a position to bring fire to bear on the obstacle it was decided that the role of the patrol was best fulfilled by returning to guide its battalion to this point, rather than by continuing a reconnaissance which might alarm the enemy and give warning of the main advance. It had therefore withdrawn.

The student may well pause here, and quivering manual in hand, reflect upon night patrols in general and on this one in particular.

Just before daylight the steep slopes of the ridge came into sight. The troops deployed and started to scramble upwards. As day dawned the crest was reached without opposition, and patrols went forward to gain touch with the Germans. Shortly afterwards orders were received that no further advance was to take place, and here, with the arrival of daylight, we may leave the study of this omnibus night operation.

It may be said that to extract lessons from an action in which everything went well when, according to the book, everything should have gone wrong, is an unusual task for a student of military history. It ought not to be unusual, for it will often be profitable. In the author's solution to the task there are six main lessons of military technique. They are not difficult to find. The harder road is the road of the real lesson of this little incident in a huge campaign, and it is to be found in each individual's answer to two questions :—

Firstly—as commander of this Brigade in these circumstances, what would I have done ; what would I have been capable of doing ?

Secondly—what is there in this action which may be held to account for its success ; was it something which, by its absence, was responsible for such a failure as that on " Rhododendron Ridge " (Anzac) on a night in August, 1915 ; and does our training, in any way, recognize such factors ?

THE MERCHANT SHIP IN CONVOY

By CAPTAIN F. J. THOMPSON, O.B.E., R.D., R.N.R.

On Wednesday, 8th November, 1933.

ADMIRAL SIR A. E. M. CHATFIELD, K.C.B., K.C.M.G., C.V.O., in the Chair.

THE CHAIRMAN, in introducing the Lecturer, said that Captain Thompson had a distinguished career during the War. At the outbreak of hostilities he was commanding the Royal Mail Steamer "Royal George" on the North Atlantic trade route. Two months later he was helping to convoy the Canadian Brigade over to England. Then he went trooping to the East, taking out Territorials to India and elsewhere. His next duty was to take part of the Naval Brigade, under Commodore Backhouse, out to Gallipoli. Then he came home and served in a 30-knotter of the Nore Command. Subsequently he served in one of the "River" class destroyers in the Devonport Command, where he got further experience of convoy work; and finally he received the very onerous and distinguished appointment of Commodore of Convoys between England and Gibraltar.

LECTURE

THE practice adopted in the Great War, of convoying merchant ships was by no means new. In fact, in the XVIIIth century it was a well-established method of trade protection. Mahan, in his "Life of Nelson," writes as follows:—"Nelson returned from the Baltic in December, 1781, in the "Albemarle," with a convoy of a hundred and ten merchant ships, all that remained of two hundred and sixty ships from Elsinore; he said 'they behaved as all convoys that ever I saw did—shamefully ill—parting company every day.'" As Commander-in-Chief in the Mediterranean in 1805, Lord Nelson, recognizing the importance of protecting British Trade, made strenuous demands on the Admiralty for more frigates for the convoying of merchant ships against privateers. He stated, "I am pulled to pieces by the demands of merchants for convoys," and he recognized that it must be so. At that time, merchant ships assembled at Malta, where convoys were formed for Gibraltar, and escorted by a frigate or ship of the line, and by one or two smaller vessels.

At the outbreak of the late war no complete organization existed for the transport of troops and war material from outlying portions of the British Empire. When the British Dominions rallied to the aid

of the Mother Country in August, 1914, with offers of troops and supplies, ships had to be specially chartered in order to transport this timely aid. Convoys of liners were promptly assembled in the ports of India, Canada and Australia under naval supervision. One of the first convoys to cross the Atlantic was that assembled in Glacé Bay, Canada, under the orders of Rear-Admiral Sir Rosslyn Wemyss (the late Admiral of the Fleet Lord Wemyss). The Canadian Government had undertaken to provide an army of 30,000 men, and under the able administration of Colonel (afterwards Major-General) Sir Sam Hughes, this force was assembled at Val Cartier, Quebec, in remarkably quick time. The Duke of Connaught, who was then Governor-General of Canada, took great personal interest in the formation of this army. Prior to its embarkation, he was often to be seen on the breakwater at Quebec, boarding the various troopships quite unannounced, and attended only by a single Staff Officer. I had the honour of the Duke's company at lunch on board my ship, the R.M.S. " Royal George," when he crossed the river with us, prior to our embarking the Princess Patricia's Canadian Light Infantry, under that fine officer Colonel Farquhar, late Military Secretary to the Governor.

After embarking the troops, the transports proceeded independently from Quebec to Glacé Bay, where they took up their anchor billets under the direction of Admiral Wemyss. He had under his orders a squadron of four second-class cruisers—" Charybdis " (flagship), "Eclipse," " Talbot," and " Diana." Altogether thirty-two well-known passenger liners, each carrying from 1,000 to 2,000 troops or alternatively their complement of horses and guns, according to the type of ship, were assembled in the Bay. The Admiral evidently considered the escort force inadequate, for he selected the R.M.S. " Laurentic," Captain M. Mathias, and R.M.S. " Royal George " to act as auxiliary escort cruisers, and the ships were presented with White Ensigns, which were accepted as a great honour: until the outbreak of war both vessels had flown the Blue Ensign, but when war was declared all merchant ships were instructed to fly only the Red Ensign.

On 3rd October, 1914, at 1.30 p.m., we weighed anchor and proceeded out of Glacé Bay, down the Gulf of St. Lawrence, towards Cabot Straits, under fair weather conditions. Speed was maintained at 9 to 9½ knots, owing to one or two slow ships, although the majority could have maintained 14 knots. It was a heterogeneous collection of ships of various types and sizes. No system existed for station-keeping, and with the exception of the few who had served in the R.N.R., none of the officers and engineers had had any training in the art; yet during daylight station was fairly well preserved.

The Convoy was organized in three columns, 15 cables apart, ships in column 4 cables apart. H.M.Ss. "Charybdis," "Eclipse" and "Diana" led the columns, with H.M.S. "Talbot" as rear cruiser. The "Royal George" and "Laurentic" took station during the night as rear ships of columns. During the day their duties were to scout some five miles ahead of the Convoy, to report all vessels sighted to the flagship, and to warn off merchantmen in the track of the Convoy. It must be admitted that the columns were apt to stretch out to abnormal length at night, but considering that no station-keeping lights were used, and the general lack of experience, this is hardly surprising. From the signals which the Admiral made by W/T it was evident that at one time his views corresponded very definitely with those of Nelson already quoted. But it must be remembered, too, that the ships were of different speeds and sizes, and no revolution telegraphs were fitted.

My own ship, the "Royal George," had been fitted with a searchlight for picking up icebergs at night—for which purpose, incidentally, it was quite useless—but, whilst steaming down the Gulf of St. Lawrence I got an engineer and carpenter to improvise a Scott flashing shutter, and asked permission from the flagship to test this apparatus with the "Talbot," the rear cruiser. The "Talbot" gave the flagship a good report of our searchlight signals, and as a result, we were ordered to take station five miles ahead at daybreak.

On reaching the Atlantic, the escorting cruisers were reinforced by the battleships "Glory" and "Majestic," and later by the battle-cruiser "Princess Royal." That gallant officer Rear-Admiral Cradock, in his flagship, also shadowed the Convoy to the southward, and when he bade us farewell, steamed down the lines of ships, the troops cheering as he passed. It was known that, at that time, German cruisers were loose somewhere in the Atlantic, South of the Convoy's track, but no attack was made on us.

An episode which took place during the voyage showed that the Merchant Navy was soon adapting itself to working in company. One morning the "Royal Edward" lost a man overboard. The officer-of-the-watch in the "Franconia," the ship directly astern, saw him fall and promptly called away the sea-boat's crew. The "Royal Edward" had already hauled out of line and lowered a boat, but the "Franconia," by smart work, dropped her boat into the water and picked up the man, afterwards transferring him to the "Royal Edward." The latter ship again turned sixteen points and picked up her boat and her seaman, all without dropping astern of the rear ship of the Convoy. The Admiral made a general signal, "Well done, "Franconia."

Weather conditions were, for the most part, only moderate. We encountered one N.W. gale, and the strong wind on the port beam made steering and station-keeping at such a slow speed particularly difficult for the big ships.

The spirit and enthusiasm of the troops throughout remained very high, concerts and entertainments being held nightly. On approaching the English Channel the Convoy was split up into three squadrons—Red, White and Blue—the faster ships being sent on ahead. The first Canadian Convoy arrived at Plymouth on 14th October, 1914. As the troopships steamed up the Sound and passed Drake's Island and the Hoe, they were cheered to the echo by the local inhabitants, who lined every point of vantage. As we entered the Hamoaze, we passed the old three-decker training ship " Impregnable," which was flying the flag of the Commander-in-Chief at Plymouth, and were welcomed by the cheers of her boys, who had manned ship in honour of the Canadians.

Thus the first Convoy of Dominion troops reached the Mother Country intact and without the loss of a man—a good omen for the future of the Transport Service.

The Indian Troop Convoy, and the first Australian and New Zealand Convoy, whose numbers were even greater than the first Canadian Convoy, also arrived without any serious mishap. It will be recalled that it was while escorting the Australian Convoy that H.M.S. " Sydney " accounted for the German cruiser " Emden " off Cocos Island.

Sundry attempts were made in the early days of the War to organize Convoys to and from India and Egypt, but these were generally ineffective, the escorting vessels being frequently too small or unable to maintain the speed of the ships escorted. In November, 1914, a whole column of troopships, bound to Indian ports, was escorted down the Red Sea by a commandeered yacht armed with a six-pounder Hotchkiss gun. She could only make about 8 knots.

When the submarine campaign opened in February, 1915, lack of escort vessels prevented any further trials of the Convoy system. It was not until 1917 that the Admiralty adopted the Convoy system *in toto*. During the black month of April, 1917, some 80,000 tons of merchant shipping had been sunk by submarines and about 45,000 tons by submerged mines, a total of 125,000 tons. Hitherto there had been much divergence of opinion as to the feasibility of carrying out a comprehensive system of Convoys. At a conference held at the Admiralty in February, 1917, certain senior mercantile marine officers gave it as their opinion that it was impracticable to navigate twelve to twenty merchant ships in close order. Most shipowners were also opposed to the idea on account of the loss of time involved.

In the end, however, the system was adopted; and, thanks to the efficiency with which it was organized and carried out and to the hearty co-operation of the officers and men of the Merchant Service under naval guidance, it may be said to have been the turning point in the War. In fact, it is not too much to state that it was the saving of what had become a desperate situation. Certainly it was a prime factor in defeating the German effort to destroy our Mercantile Marine by submarine attack.

As L. H. Gibson and Maurice Prendergast have made clear in their book, "The German Submarine War," the fact that the Convoy system was not adopted until the latter stages of the War was in no way due to any blind and dogged conservatism on the part of the naval authorities in clinging obstinately to the patrol method. Those authorities had to make the best use possible of the forces at their command. If fast war vessels were not to be had for the protection of trade, then, so long as the deficiency existed, the Convoy system was impossible and the protection of trade had to be carried on by the small, slow, and ill-equipped vessels available. With the advent of the United States into the War, additional escort vessels were forthcoming.

In due course, central organization was established at the Admiralty, known as the "Convoy Section," under the Organizing Manager of Convoys, and Director of Mercantile Movements, who controlled the system in Great Britain. In the early part of 1918, all British and the greater part of the Allies' shipping came under this organization. At each of the great ports where Convoys assembled and sailed, such as Liverpool, Milford Haven, Falmouth and Devonport, Port Convoy Officers were appointed. At ports of assembly abroad, such as New York, Halifax, Norfolk (Virginia), Gibraltar, Port Said, and Dakar, similar appointments were made. These officers—Captains or Commanders, R.N. or R.N.R.—organized the ships available into Convoys, and consulted with the Captains of the merchant ships, who reported to them all particulars of their ships, such as speed, tonnage, general capabilities or peculiarities.

Commodores of Convoys, appointed by the Admiralty, were sent to the various ports to take charge of the Convoys throughout their voyage. They selected the most suitable merchant ships to act as guide of the Convoy. The Commodore's Staff consisted of a Chief Yeoman of Signals, three signal ratings, and usually one W/T rating.

Convoys were organized for different trades and according to the types of ships and their speed. North Atlantic Convoys were organized to carry Canadian and American troops and foodstuffs. What became known as Norwegian Convoys traversed the North Sea. Then there

were Gibraltar, Mediterranean, and South American Convoys, all with their ports of assembly; but, perhaps, the most picturesque of all were those under sail, voyaging from West of England ports to the Continent.

The day before sailing a conference was held at the naval headquarters, where the Masters of the ships assembled with the Commodore, Port Convoy Officer, and Commanding Officers of the Escort ships. The senior officer present presided, and the conference was first addressed by the Port Convoy Officer on the procedure for weighing anchor and proceeding out of harbour in a certain sequence. The Commodore of the Convoy then addressed the conference on the procedure of the Convoy at sea, emphasizing the importance of such points as correct station-keeping, darkening ship, zig-zagging, and action to be taken in the event of submarine attack. The Masters of ships were invited to ask questions on any matter which might not be clear, and to make any suggestions for improving details of procedure. A copy of "Mercantile Convoy Instructions" as well as "Plans of the Convoy," as drawn up, were distributed to all Commanding Officers, and all procedure as well as sailing orders were communicated in writing. Signals in case of fog, for alterations of course by sound signals on the whistle or by syren, in addition to flag signals, were fully explained and demonstrated. A Master of one of the ships was appointed Vice-Commodore in case of loss of the Commodore's ship.

A Convoy signal book was brought out by the Naval Staff Signal Section, giving special signals for use between ships in Convoy; a copy was supplied to each ship. This proved of great utility and simplified procedure.

When one considers the difficulties of navigating without lights, with ships of varying sizes and speeds in close formation increasing the difficulties of manœuvring, it can be readily understood that the responsibilities and risks were considerable. Here I should like to pay tribute to the seamanship and skill of the Masters, Navigating, and Engineer Officers of the Merchant Navy. In my own experience of convoying approximately four hundred ships during a period of twelve months, no collision took place in convoy.

One very important branch of the work was the routeing of Convoys. In home waters, this was done by the Admiralty, and it had to be very carefully organized and timed so that outgoing, incoming, and crossing convoys did not meet. To give an example:—a Convoy from Milford Haven sails at 2 p.m. on a certain day; this Convoy passes close to the route of a homeward-bound Atlantic Convoy for Liverpool, and a little later a homeward Mediterranean Convoy for Liverpool. When crossing the Mouth of the English Channel, an outward Devonport

Convoy is routed to pass astern of the southbound Convoy, and when crossing the Latitude of Ushant an American Convoy, bound for Brest, passes close ahead. It will readily be seen that any error in the timing may easily lead to disaster. It was here that wireless telegraphy proved invaluable. Senior Officers of Convoys, as they got into wireless touch with the United Kingdom, at once reported their positions from a certain rendezvous, stating whether they were ahead of or behind time due, and the speed being made. This enabled the Intelligence Officers to plot the Convoy and, according to whether it was ahead of or behind time, to route it clear or instruct it to go slow.

It may well be asked, were there no collisions or narrow escapes of collision, considering the close proximity of Convoys to each other in home waters. Personally, I heard of no serious collision cases, though I believe underwriters did. In my own experience we had one narrow escape, while on two occasions the International Regulations for preventing collision at sea were intentionally broken. The first case occurred shortly after leaving Milford Haven, steaming to the S.W. after dark. A Convoy was sighted on the port bow steaming North. It was obvious to me that the other Convoy could not alter course to starboard and clear my rear ships. I therefore ordered course to be altered to port by Very light signal, and switched on bow lights to pass under the stern of the rear ships of the other Convoy. One straggler of the other Convoy, being astern, saw red lights on his starboard bow and altered course to Starboard. He sailed between our columns, narrowly missing collision with one of my ships.

On another occasion, when homeward bound in the vicinity of Cape Finisterre, I sighted a Convoy four points on my starboard bow, apparently steaming across our course. It was impracticable to pass port to port, and I knew it was bound South, so I fired a red Very light signal, indicating I was altering course to port. The Commodore of the southbound Convoy fired the same signal, and we passed starboard to starboard comfortably. It was perhaps remarkable that more collisions did not occur. I put our immunity down to the very keen look-out kept on the bridges of all ships.

Having completed the organization at the port of departure, the Convoy put to sea as previously arranged, under the orders of its Commodore, who flew the Union Flag at the fore. If it were a port with a narrow channel leading from it, the ships proceeded out of harbour in single line ahead and assumed their formation outside; but in large harbours, such as Gibraltar Bay and Milford Haven, Convoys proceeded to sea in formation.

To lessen the risk of submarine attack, Convoys were formed with a broad front and shallow formation, quite the reverse of the old squadron formation, depending, of course, on the number of ships in the Convoy. A Convoy of thirty-two ships would be formed into eight columns of four ships—the columns being three or four cables apart and the ships in column two cables apart; whereas our first Convoy of thirty-two ships, prior to the submarine danger, was in three columns, fifteen cables apart, ships in column being four cables apart.

Stationed at intervals around the Convoy, in the positions found by experience to be most beneficial for warding off submarine attacks, were the destroyers and other escorting vessels. The Ocean Escort—cruiser, armed merchant cruiser or gunboat—zig-zagged ahead of the Convoy.

On the Commodore signalling the course and speed, the Convoy proceeded with the escorting craft zig-zagging ahead, astern, and on the flanks. As early as possible on the voyage the Convoy would be exercised in zig-zagging. Zig-zagging means that, instead of ships proceeding on a steady course, they alter course at short intervals, a varying number of degrees to starboard and port; thus they are frequently under helm, which makes it much more difficult for a submarine to aim a torpedo successfully. Clocks being set to Greenwich Mean Time, one of the zig-zag diagrams would be selected and ordered to be followed. At a given signal all ships of the Convoy would alter course together the required number of degrees to port or starboard. After a certain interval they would alter together again to a new course, and so on, the resultant of the zig-zag being to make good the mean course.

The system necessitated close attention and good seamanship upon the part of the Masters of ships and officers of the watch. Zig-zagging was invariably carried out during daylight and moonlight with Convoys above certain speeds, but not during dark nights. Indeed, to have attempted it in such conditions would have been to court disaster. Nor was there the same necessity at night. It must be remembered that no navigation lights, or lights of any description were used, officers having to judge their distances at night entirely by eye. On moonless nights, with a Convoy of ships camouflaged or painted grey, it is difficult to make out a vessel at a greater distance than a mile; consequently, an enemy submarine stood a greater chance of being run down on the surface than he did of bagging a ship, while to operate with the periscope only would be of little use under such conditions of visibility. It frequently happened that, having made all dispositions for the night, on taking a final look round from the bridge at dusk one could not see all the ships of the Convoy. On winter nights this meant waiting many hours for daybreak in order to be able to count the flock!

During the voyage, Convoys were exercised in the use of fog buoys, in manœuvring together, forming line of battle, and practice firing. One very important matter which always required close attention was "darkening ship." In the early days it was very difficult to get ships efficiently darkened. To begin with, they were not provided with adequate coverings to the port-holes or scuttles; then individual members of the crew did not realize that a small flame, even a candle or a match, threw a very conspicuous light on a dark night, particularly if reflected by a mirror. It was not until Admiralty Regulations and recommendations were brought out, and authority was given to the Masters of merchant ships to fine anyone on board for neglecting to screen lights, or for carelessness in exhibiting a light, that ships were efficiently darkened. Again, the fact that amongst the crew were men who had been torpedoed, and so appreciated the importance of darkening ship, soon tended to educate the remainder. As a result, for the last few months of the War, well-darkened ships were the rule rather than the exception.

To show the spirit of the men of the Merchant Service, whether Masters, officers or men, I may mention that, in my first ship as Commodore of a Convoy, I found that the Captain, Chief Engineer, Third Officer, Chief Steward, and several other members of the crew, had all been torpedoed. The Captain of this ship had had a thrilling experience, his vessel having been torpedoed in mid-Atlantic in March, 1917. The ship's company were shelled in the boats by the submarine, and at nightfall a heavy gale sprang up. The Captain's boat drifted almost helplessly in the heavy seas, riding to a sea-anchor for six days with very little provisions or water. One by one the men dropped off from hunger and exposure, and were passed overboard, until, when the boat was picked up, only one of the survivors was able to move.

Although it has been observed that the Convoy system was largely the means of defeating the German submarine effort, it is not to be supposed that Convoys were immune from submarine attentions. Many skilful attacks were made by the enemy, with varying success from his point of view. One or two daring attacks were made in which the submarine appeared between the columns of the Convoy and fired torpedoes in two directions. On the other hand, the majority of attacks, especially if a destroyer escort were present, generally ended in disaster for the submarine, even though she might succeed in sinking one or two ships.

The vessels comprising the Destroyer Escort Force, which consisted of destroyers, convoy sloops, trawlers, or patrol boats such as the "Kil" type, were liberally armed with depth-charges. Skilfully used,

these usually had the effect of bringing to the surface or damaging the submarine, if not actually sinking her, and once on the surface, her fate was sealed. Depth charges may be regarded as under-water bombs. They contain a heavy charge of T.N.T., fired by means of a depth setting and hydrostatic valve, so that the charges could be adjusted to go off at varying depths. The explosion is a very heavy one and, if the depth charge is dropped within seventy feet of a submarine, it is almost certain to destroy her, or at least to upset her equilibrium and bring her to the surface.

A personal account of a submarine attack on a Convoy may be of interest. It was about the middle of December, 1917, when enemy submarines had been very active at the entrance to the English Channel. On the day in question, several had been reported. The Convoy had been carrying out its first exercises in zig-zagging, and about 8 a.m. the signal " Resume Course " was made, as several ships were out of position. A signal was also made to one of the ships in the second column from starboard " Take up your appointed station," as she was considerably astern. Suddenly, the leading starboard wing ship opened fire with her howitzers and made the " submarine alarm " signal. Very soon afterwards a loud explosion was seen and heard, which indicated that the ship astern of station had been struck on the stern post. She soon began to settle and the crew took to the lifeboats. The vessel dropped astern and sank, the crew being picked up by one of the trawlers. The leading escorting vessels raced to the position of the submarine and dropped depth charges, but there was no indication that they had accounted for the enemy.

Information recently received regarding the tactics of enemy submarine commanders shows that, after attacking a Convoy in the morning, they would secure a good offing, watch the Convoy on the surface from a safe distance, and then get ahead of it, submerge, and wait for it again at sunset. This is exactly what the enemy did in the above instance, but fortunately everyone was on the alert in the Commodore's ship and in the Ocean Escort—an American gunboat, stationed ahead of the Convoy. Suddenly the look-out from the Ocean Escort reported " Object to starboard," sounded the " alarm blast " on her whistle and altered course to starboard. The Commodore's ship having heard the look-out's report, at once altered course to starboard, and kept a keen look-out. Almost immediately the track of a torpedo was seen passing under the stern of the Ocean Escort and coming straight for the Commodore's ship. The ship being already under helm, engines were put full speed ahead with an emergency ring, the ship swung round quickly, and the torpedo passed close under the stern, about thirty feet clear. It approached the second ship of the next column, but fortunately passed close ahead of her, just missing her stem, and apparently sank. The Ocean Escort at

once made for the estimated position of the submarine and dropped depth charges, while the Convoy increased to maximum speed, altering course at frequent intervals, and took up a course thirty miles from the original track. There was no evidence that the submarine was disposed of, and it was getting too dark to carry out an extended hunt, but she was most probably badly shaken. This was a very skilful attack and an excellent shot. Had it not been for the sharp look-out and prompt action of the Ocean Escort and all concerned, it might have meant the loss of at least one of the senior ships of the Convoy.

One method which I adopted to avoid a watching enemy submarine was to alter course shortly before dark, about two points, and instruct all ships that correct course would be resumed some two hours after dark, stating the time and giving an executive signal. The signal I found most efficient was for the Commodore's ship to sound a blast on the whistle, which was repeated by leading ships of columns. This was safer than flashing a light.

After a Convoy had passed through what was known as the danger zone, which usually meant three days' steaming from a home port, the destroyer escort parted company with the outward-bound Convoy, and proceeded to pick up a homeward-bound Convoy at a pre-arranged rendezvous. For this purpose wireless telegraphy was invaluable—in fact, indispensable. The outward-bound Convoy then proceeded on its voyage, escorted only by the Ocean Escort (cruiser or gunboat), wing ships zig-zagging until nearing the danger zone of the port of destination, when a destroyer escort force from that port, which had conducted a homeward-bound Convoy through the danger zone, met and escorted our outward-bound Convoy into harbour.

A daring German submarine commander who operated on the Atlantic side of the Straits of Gibraltar was known by the sobriquet of "Spartel Jack," as he had been responsible for the sinking of a great many ships off Cape Spartel. He came to an untimely end after making a successful attack on a Convoy, and this is how it happened. A ship had been sunk and the crew had taken to the boats. The Senior Officer of the Escort Force, whose vessel was a "Q" ship, elected to stop and pick up the crew himself, thus dropping astern of the Convoy. He signalled to one of his commanding officers to disregard his movements, anticipating that the enemy submarine would come to the surface. His ruse succeeded; the submarine, coming to the surface in the belief that he had only a merchantman to deal with, was promptly sunk by the "Q" ship. So ended "Spartel Jack."

Gibraltar became a veritable "Clapham Junction" for Convoys. They arrived and sailed almost daily, those from England being split

up into small convoys for different destinations. Convoys sailed every four days from Gibraltar to the United Kingdom alone, and arrived on three days in every eight from England alone. Sometimes four or five would arrive and sail in one day, entailing an enormous amount of work and organization for the Senior Naval Officer at Gibraltar and his staff, particularly the Port Convoy Officer.

No account of the Convoy system would be complete without reference to the valuable work performed by the Royal Naval Air Service. From April, 1918, seaplanes, airships, and kite balloons attached to destroyers performed valuable work scouting aloft, whilst Convoys were assuming their formation, and escorted them throughout the first stage of their voyage through the most dangerous waters.

Much credit is also due to the naval forces of the United States for their valuable and hearty co-operation with the Royal Navy and Merchant Navy in Convoy work. American cruisers, gunboats and destroyers, as well as submarine chasers, crossed the Atlantic and augmented the British forces at a critical time. The prompt and energetic way in which American naval officers and men fell in with our methods and helped to improve them has been officially recorded.

The following losses of ships in Convoy are taken from " The German Submarine War," already referred to :—

North Atlantic	.74 per cent.
Gibraltar	1.50 „
West Africa	.64 „
Rio de Janeiro	.32 „

My own experience of Gibraltar Convoys was nineteen Convoys aggregating 388 ships, of which only one was lost.

The knowledge gained from the experience of convoy during the War has doubtless been appreciated and recorded by the Admiralty, but so far as the Merchant Navy is concerned, the value of that experience would appear to have been lost. Ships built since the War have, generally speaking, not been fitted with efficient means of communication between the bridge and engine-room to enable speed to be altered by revolution, nor, in the majority of cases, between the bridge and quarter deck to enable orders and control to be carried out at the gun positions. In my view, all new merchant tonnage should be fitted with engine-room revolution telegraphs or at least navy phones between the bridge and engine-room, and bridge and quarter deck. Unfortunately, merchant officers receive no training or practice in station-keeping—in fact it may be news to naval and military officers to know that there is no universal system of training for officers of the British Merchant Navy to-day, and

the majority receive no systematic training. However, this is a subject somewhat outside the purview of this lecture, and I simply refer to it as it affects the efficiency of merchant ships in the unfortunate event of a future war. If the Merchant Navy is to supply a reserve of officers and men for the Royal Navy, it would appear to be incumbent on the Government to assist and approve some scheme of suitable training. I would suggest that, as part of that training, all cadets and apprentices to the Merchant Navy should go through a course of six months' training in the Royal Navy, and that all those considered suitable should be enrolled as Cadets, R.N.R.

Another suggestion I would submit is that provision should be made to enable the hatches of merchant ships to be strengthened and made airtight, and other deck openings also to have facilities for being made airtight. If this were done there would be far fewer losses through submarine attack. This question is fully dealt with by Captain D. J. Munro, R.N., in "Convoys, Blockades and Mystery Towers," and the practice was carried out in several ships of his Convoys. If, in addition, a small air compressor with the necessary connection to each hold could be fitted, ships would be practically immune from the risk of sinking. I had an experience of this prior to the War: a ship had stranded and had a large hole in No. 2 hold, the amount of water being such that five salvage pumps could not deal with it. The decks were made airtight, compressed air was applied from a 10-ton air compressor, and the water was ejected in thirty minutes and the ship floated off.

In regard to armament, doubtless this has been carefully considered by the Admiralty, but I would suggest that plans for mounting guns in merchant ships should be available for immediate use. The armament of merchant ships should, in my view, include anti-aircraft guns in addition to anti-submarine guns as merchant ships in a future war will be likely to suffer attack from aircraft as much as—if not more than—from submarines.

With regard to station-keeping, I should like to recall the excellent spirit which was fostered when Admiral Lord Charles Beresford instituted a system of signalling between His Majesty's ships and merchant ships. Merchant Navy officers at once took steps to make themselves proficient in signalling, and a vast improvement rapidly took place. The Admiralty apparently attach considerable importance to visual signalling between ships of the Royal and Merchant Navies, as is shown by the reports which appear from time to time in Fleet Orders. It is, obviously, recognized that proficiency in signalling would be valuable in the event of war; is it not, therefore, equally important that Merchant Navy officers should be trained in the art of station-keeping and navi-

gating in close order and that their ships should be equipped to enable them to carry out these important duties in case of need? With a view to giving the necessary experience, I would like to suggest that a somewhat similar procedure should be adopted in regard to station-keeping as is now in force in signalling. My submission is that H.M. ships meeting merchant ships at sea, providing the exigencies of the Service permit and that the ships are proceeding in the same or similar direction, should signal to the merchant ship to exercise station-keeping, requesting her to take station astern or on the beam and signal course and speed. This might be carried out with one or more merchant vessels. Ships bound for Gibraltar or Port Said would suffer little or no inconvenience in practising station-keeping, and the officers would, I feel sure, enter into it with zest.

Further, considering the drastic reduction which has taken place since the London Naval Conference of 1930, both in the ships and personnel of the Royal Navy, it is suggested that the Royal Naval Reserve should be greatly strengthened in officers and men. I am convinced that in the event of a future war, merchant shipping will play an even greater part than hitherto. It is for this reason that I would urge that the dearly-bought experience of the late War should be kept prominently in mind. Co-operation between the Royal and Merchant Navies should be closely fostered, for in no part of maritime activity is that co-operation more necessary than in the business of sea transport under naval Convoy.

DISCUSSION

CAPTAIN G. W. O'BRIEN asked whether it was the Lecturer's opinion that, in the event of a future war, Convoys would be accompanied by aircraft carriers in addition to having anti-aircraft defences on the merchant ships.

CAPTAIN H. STANSBURY, R.N., after mentioning that he had been Port Convoy Officer at Hampton Roads, said that the invention of depth charges and the arming of merchant ships had gone almost step by step with the formation of Convoys; and he thought it was quite an open question how much overcoming the submarine menace had been due to the arming of merchant ships or how much to the adoption of the Convoy System.

The arrival of German submarines off the American coast had increased the difficulties. On leaving Hampton Roads, a swept channel had to be negotiated, and, practically, only one ship at a time could pass through it. With nearly fifty ships forming up outside, the German submarines had a very fine chance, especially when there was no adequate destroyer escort available.

Captain Thompson had recalled the very hard times which the officers and men of British merchant ships had had in working in convoy. He, himself, remembered the case of an American captain who came to him and said "How am I to carry out these orders? I and my Chief Engineer are the only two officers

in my ship who have ever been to sea before." The rest of the officers had had only three to four months' instruction in a training college—and that was all!

VICE-ADMIRAL CHETWODE (*Commanding Royal Naval Reserves*): "I am in entire agreement with the Lecturer's desire to see the strength of the Royal Naval Reserve greatly increased; but it is a question of money. Its strength is approximately 10,000 officers and men, and that costs a very great deal to maintain. Perhaps the First Sea Lord may be able to induce the Government to give more money to the Naval Reserve, but I imagine a bigger shipbuilding programme is more needed at the present time.

Sir David Wilson-Barker, in a conversation I had with him recently, advocated the whole of the Merchant Navy being automatically enrolled as members of the Naval Reserve. The difficulty in the way of that is that we now have a volunteer Naval Reserve which gets a subsidy, and if we converted it into a compulsory body and made everybody join it, it could no longer be paid a subsidy. It would be very difficult to change a Service which is now paid by a subsidy into a Service which would get nothing.

With regard to a proposal that Cadets should do six months' training, I think that might be carried out more than it is now.

Some of the points the Lecturer mentioned in regard to certain fittings for merchant ships, such as revolution telegraphs and compressed air for clearing compartments, and also better sub division, are interesting; but they would have to be paid for by the Admiralty, and I doubt money being available during the existing financial stringency."

CAPTAIN SIR DAVID WILSON-BARKER, R.N.R.: "Vice-Admiral Chetwode has mentioned a conversation I had with him the other day: what I meant was that all the Mercantile Marine should be brought under the Admiralty in time of war—not at the present time.

The subject of this Lecture is most interesting and, nowadays, with the advent of the aeroplane, it becomes still more interesting, because in the next war we shall have an overhead menace as well as an undersea menace. But I do not think that, if we are properly prepared, there will be any difficulty in meeting it.

I hope everything will be done to expand the Naval Reserve; that should greatly strengthen the hands of the Admiralty in these times, when the Government is so loath to allow any money for defence purposes."

THE INTRODUCTION OF THE CONVOY SYSTEM.

ADMIRAL OF THE FLEET THE EARL JELLICOE: "Having been at the Admiralty at the time that the Convoy System was adopted, I might perhaps put before you some of the difficulties with which we were faced in introducing that system.

Had there not been a Minister of Shipping appointed in December, 1916, and had not the Ministry of Shipping been brought into intercourse with the Admiralty and so enabled the Mercantile Marine to be placed under the Admiralty, we could not possibly have organized the Convoy System. Apart from that question, there were many difficulties which precluded it being adopted earlier than it was. One of them was the hopeless shortage of ocean escort vessels, and the equally hopeless shortage of escort vessels to take the Convoys through the submarine zone. Then there was the impossibility of getting ports of assembly in the United States until that country came into the War; equally, we could not place convoy organization officers in the United States until they came into the War. Without those two essentials we could not organize Convoys from America. To such an extent did

the Americans carry their neutrality that, before they declared war, our defensively armed merchant ships were not allowed inside United States ports.

Another difficulty which militated against the adoption of a Convoy System was the great delay caused in the assembling of a Convoy. Some ships were ready long before others. It was those delays which, in the days of the Napoleonic wars, caused such tremendous criticism of that system. It is quite true that, owing to the fine organization of the Convoy System during the War, it was eventually found that the turn round of ships was done more quickly than it had been before the system was adopted.

Another delay, of course, was due to a Convoy having to go from its port of departure to its port of assembly at the speed of the slowest ship. That entailed enormous delay which could never be overcome. Another difficulty was the great danger of a Convoy running into a minefield. A single ship running into a minefield meant perhaps the loss of one ship, but a Convoy running into a minefield was a very different matter. That was another reason which caused one to hesitate before adopting the system. Thanks to the work of the Mining Division in the Anti-Submarine Division at the Admiralty during 1917, our minesweeping arrangements were very much improved, and that, together with the introduction of the otter, minimised the danger from minefields.

Apart from these considerations, there is always the danger of surface attack on a large scale on a Convoy. Why that never happened to the Atlantic Convoy it is difficult to understand. It did happen in two cases to the Scandinavian Convoy, and such was the effect upon the mind of the then Commander-in-Chief of the Grand Fleet of the absolute necessity for keeping the Fleet free to protect that Convoy, that our historic policy of seeking the enemy's fleet was given up in 1918, largely for that purpose.

I would like to add my testimony to the magnificent work of the Mercantile Navy during the War, which made the success of the Convoy System possible. If it had not been for the splendid seamanlike work of the officers and men of the Mercantile Navy, no Convoy System could have succeeded. The whole Empire ought to be grateful from the bottom of its heart to those officers and men for what they did in that respect during the War.

I would like to add, too, a word of gratitude to the captains and officers of the destroyers which formed the anti-submarine escorts. Owing to the serious shortage of destroyers it was impossible to organize separate escorts for the outward Convoys and for the inward Convoys. What had to be done was that the destroyers, towards the end of 1917 and the beginning of 1918, had to take out an outward Convoy and meet and bring in an inward Convoy. That meant most careful organization; otherwise a batch of destroyers might be hanging about waiting for a Convoy for such a long time that their fuel would be exhausted and there would be no escort to bring in the inbound Convoy. It meant also a tremendous strain not only upon the officers and men of the destroyers, but upon the destroyers themselves, and the result was that in the winter months of 1917 many of those craft had to be laid up for repairs."

THE LECTURER:

THE LECTURER, in reply, said: "With regard to the first question as to aircraft carriers—I do not know if I am really in a position to answer that. My own opinion is that aircraft carriers would make very excellent ocean escorts, but the question would be whether the Admiralty would have sufficient of those vessels to spare to use them for convoy work.

With regard to my remarks on the use of compressed air, I may quote my own experience in a merchant ship prior to the War. The ship had run ashore in the St. Lawrence; winter was setting in, and the salvage pumps were quite inadequate to float her. As marine superintendent of the company, I got hold of a compressed air plant, and we proceeded to make the decks air-tight and to shore two wooden decks up to a steel deck. An iron hatchway was fitted with an air-lock, and when all this work was completed—it took ten days—we applied the compressed air, without shoring up the bulkheads, and blew out the water inside half-an-hour. Then we were able to go down into the hold through the air-lock. The ship was taken to Quebec and put into dock, being kept afloat on compressed air until temporary repairs could be made.

I am interested to hear the remarks about the Royal Naval Reserve, although I should like to see the personnel increased. We can, of course, commandeer most of the officers of the Merchant Navy in the event of another war, but they would not have had any training in station-keeping, and it is quite impossible to expect them to run a Convoy in close order without that experience. It took several months, after the Convoy System was introduced, before station-keeping became really good. What I should like, if we cannot increase the Royal Naval Reserve, is that officers of the Merchant Navy should be given opportunities for acquiring knowledge and experience of station-keeping."

THE CHAIRMAN:

"I am very glad to have heard this Lecture, and to have been the Chairman, because I am sure the Navy would feel glad that I occupied that position when such a distinguished officer of the Mercantile Navy was giving a lecture. Also we are most fortunate in having here the Admiral of the Fleet, on whose shoulders rested a great responsibility at the Admiralty at the time of the beginning of the unrestricted submarine warfare. He has told you briefly what the difficulties were, and I cannot add to them because he knows a great deal more about the subject than anybody else.

As far as the suggestions made by Captain Thompson are concerned, I can only say that they will be borne in mind. I value them because they are the suggestions of a man who knows what he is talking about; but, at the same time, as the Admiral Commanding the Reserves told you, money rules everything, and it is exceedingly difficult, for instance, to provide—I will not say aircraft carriers; they are limited by the Washington Conference Treaty to five in number—but it is very difficult to provide money for anything but the barest necessities of the Navy in these days. I wish, indeed, that shipowners would fit revolution telegraphs to their ships, and take other steps to improve their vessels, but I am afraid that they also are very hard hit, and so it seems that we shall have to wait. But the fact that these things are recorded is very important. We must not lose our war experience. By a lecture such as this we retain that war experience and it brings it home once more into our minds.

There is no doubt that the submarine campaign very nearly drove us out of the War, and if it had not been for the successful operation of the Convoy System undoubtedly it would have done so. As Lord Jellicoe has told you, the great inherent disadvantages of Convoy, and what made it so difficult to start originally, are the inevitable delays—delays in ladened ships waiting to be convoyed; delays of faster ships having to take their place in slow Convoys, and then, and almost as bad, the congestion at the ports due to the sudden arrival of

huge numbers of ships. The ports were continually having to deal with peak loads instead of a steady flow of imports coming into the country.

The way to get over these things is by a more complete and better organization, and a continual study by those responsible for the subject and of the whole problem of our Mercantile Marine in War.

It is interesting to recall what was said here by a Lecturer over fifty years ago. Speaking in 1881, Captain Colomb said: 'it is very desirable to keep in view clearly the broad issues of great national defence questions, and I specially allude to the one of Convoys, not as a matter to be settled in ten minutes discussion, but for patient calculation and serious study.' I think we can derive some satisfaction from the tribute paid to those who are responsible for our Convoy work in all its aspects by that very distinguished ex-enemy Admiral Von Tirpitz when he said 'the establishment and development of the Convoy System, which involved years of work, constituted a tremendous achievement on the part of the English.'

The record of the Convoys in the War, as Lord Jellicoe has told you, is a record of the gallantry of the Mercantile Marine—and not only their gallantry, but their skilled application to circumstances which were to them entirely unexpected. It is a record, too, of co-operation between our countrymen, between the naval authorities and the mercantile marine authorities, and between the shipowners and the shipmasters, the railways and the port authorities, and such bodies as the Munition Boards and the Food Control Boards. All had to work together. Unless all those responsible and separate departments are convinced of the importance and absolute necessity of what they are asked to do, you cannot get efficient co-operation; but by all pulling together, as we did and as we shall again, you can get it, and then the disadvantages of the Convoy System will be accepted because of the greatly increased security that it gives to the ships and their cargoes."

The customary votes of thanks to the Lecturer and Chairman were carried by acclamation.

ASCENDING THE NANKOW PASS.

IN THE GOBI DESERT.

THE CITROËN EXPEDITION.

Photographs by courtesy of the Citroën Trans-Asiatic Expedition.

THE CITROËN TRANS-ASIATIC EXPEDITION

By M. CHARLES BRULL

On Wednesday, 22nd November, 1933

LIEUTENANT-GENERAL SIR J. RONALD E. CHARLES, K.C.B., C.M.G., D.S.O., in the Chair

THE CHAIRMAN, in introducing the Lecturer, recalled that the Citroën Trans-Asiatic Expedition took place in 1931 and 1932, and that the two groups engaged on it traversed about one-quarter of the surface of the globe.

M. Charles Brull was educated as a civil engineer, and served with distinction in the artillery of the French Army between 1914 and 1917, specializing in anti-aircraft and heavy artillery work. At the conclusion of the War he was engaged in scientific work in connection with small-arm ballistics. He joined the Citroën firm in 1922 and, in 1925, completed his first journey by motor from Algeria to Cape Town, thence continuing later with the same vehicles across Madagascar. For those achievements he received numerous distinctions. Since 1929 he had been the head of the Citroën laboratories, but interrupted that work in order to take part in this Central Asiatic expedition.

LECTURE

DURING the winter of 1921-22, M. Citroën, with the help of that brilliant engineer, M. Kegresse, constructed the first type of his small 10-h.p. caterpillar car. Its basic novelty lay in the use of supple rubber, instead of metallic, bands. After a successful attempt to climb the highest sand dunes in France, Mont Pylat, near Biarritz, M. Citroën decided to attempt to fit out an expedition to cross the Sahara, using these endless band vehicles. He entrusted the organization and conduct of the journey to M. G. M. Haardt, his chief collaborator and friend, who was to pay with his life for the success of a later expedition.

At the end of December, 1922, the first Citroën Expedition left Tuggurt, an oasis in Southern Algeria, and reached Timbuctu in twenty-one days; and to prove that this result was not due to mere luck, the same machines re-crossed the desert to their point of departure, although this additional journey had never been contemplated.

A more formidable project thereupon began to absorb M. Citroën's mind; namely, that of connecting, by means of a larger organization and improved machines, the Mediterranean Sea with the Indian Ocean, the itinerary being a North and South line, traced, so to speak, along the

backbone of the African Continent. Thus was launched the "Black Cruise," in which I was entrusted with the technical management of the project, including the design of the new cars.

This expedition lasted one year—October, 1924 to October, 1925. We left Colomb-Bechar, another Algerian oasis, crossed the Sahara once more through the waterless Tanezruft, reached Lake Tchad, then through the huge Equatorial forest we made for Tanganyika Territory, across the Belgian Congo. There, the expedition was divided, in order to reach the island of Madagascar by four different routes, namely Dar-es-Salaam, Mombasa, Mozambique, and Capetown, the latter being under my own leadership.

PLANS AND PREPARATIONS

According to plan this Trans-Asiatic expedition started from the Mediterranean Sea; it was scheduled to leave Beyrut, in French Syria, and to cross the Irak desert, Persia and the plains of Russian and Chinese Turkestan; then it was to follow the caravan "silk trail," and reach the Yellow Sea across the Gobi and Ordos deserts; lastly, it would make for French Indo-China. Originally, it was intended to make the homeward journey via India and to return to Beyrut across the deserts of Arabia. The premature death of M. Haardt prevented us from completing the last part of the scheme, while the initial stages were completely changed at the last minute, as will be explained later.

The expedition was organized under the auspices of prominent French scientific institutions, and enjoyed the collaboration of the National Geographic Society of Washington and the powerful help of the British Colonial Office. Its objects were most comprehensive, and may be outlined as follows: to gain contact with the oldest civilizations of the universe, to record their past and present activities, monuments, and deeds by means of photographs, sound pictures, and written documentation; to carry out scientific investigations in regard to geology, paleontology, natural history, and transportation possibilities; geodetic work; and to demonstrate the human side of our occidental civilization by offering medical help to all natives in need of it.

Such a project involved great difficulties. First of all it was necessary to obtain permission to cross the various territories. Negotiations with Soviet Russia and China were initiated at the beginning of 1929. The Soviet were, at first, not averse to our passage and favoured a course running through Astrakhan to Lake Aral, Semipalatinsk and Tchuguchak; that is exclusively in the North. Our reconnoitring party found this itinerary most unsuitable, and finally, in August, 1929, M. Haardt obtained permission to cross Russian Turkestan. In the meantime other emissaries were endeavouring to induce the Chinese Government to approve

our desires, which conflicted with Chinese "public opinion," i.e., students and the Press—a small but active minority. Lieutenant-Commander Victor Point of the French Navy, who for two years commanded a gunboat on the Yang-Tse, conducted the negotiations. Less than thirty years of age, he was endowed with every qualification to handle such a delicate matter. A compromise was finally effected with the Federation of Chinese Scientific Societies, whereby it was stipulated that there should be a partnership with Chinese members in the venture. Marshal Chiang Kai-Shek having accepted this principle, it was necessary to secure the same friendly attitude of the Chinese Turkestan, or Sin-Kiang officials, this remote province being practically independent. Marshal King, ruler of Sin-Kiang, proved most willing to help, although he stipulated that such authorization should only apply to the French members of the expedition.

The supply caravans were assembled in the Spring of 1930, and started in November under the protection of the consolidated groups of highwaymen who, in China, are the sole travel insurance companies to be trusted. Thus escorted, fifty tons of foodstuffs and mechanical equipment, divided into loads of 200 pounds on 622 camels, reached their remote destinations across the barren solitudes of Central Asia.

So far, so good; but the Soviet Government, having apparently, realised that we were in earnest, promptly revoked its permit to cross Russian territory. There was only one thing to do and that was to select another route; the only possible one seemed to be across Afghanistan, which meant crossing the Hindu-Kuch and Pamir mountains, in order to reach the Wakhdjir pass, 15,000 feet above sea level. There could be no question of crossing such mountainous districts with the heavy caterpillars and trailers already designed and tested. Thus the expedition had to be divided into two groups, and all previous arrangements in the West had to be cancelled. Special new cars, fitted with light and powerful hauling gear had to be designed and built at the last moment. Once more everything seemed in order when, in February, 1931, our envoy in Afghanistan wired that the trail to the Wakhdjir pass had become impracticable owing to a quite unexpected local upheaval. Again, our whole scheme was wrecked.

M. Haardt refused to accept defeat, and decided to accept the risks of the only other route: Himalaya passes. So, at last, the expedition started. The heavy cars were shipped to Tien-tsin by steamer, and on 11th March, 1931, I left Paris for the same destination to join Lieutenant-Commander Point. A few days later, the Pamir group with M. Haardt and its smaller cars started for Beyrut.

Before we follow the adventures of these two groups, it will be of interest to describe their vehicles. Both used Kegresse endless band vehicles, because they are the only type of motor car giving absolute safety through countries without regular roads. They can negotiate soft sand, snow, deep mud, rough trails and rocky ground. It was also possible to use ordinary wheel cars because, in case of difficulty, the caterpillars could haul them out of soft ground.

The endless bands consist of supple belts, made out of a compound of rubber and canvas, which run over a propelling pulley and an idle one, the latter being so adjusted as to keep the belt tight. In the earlier types, this propelling pulley was fitted in the rear; now it is always in front; this has the double advantage that the pulley is kept well clear of the ground, and can be easily detached by removing a few connecting nuts. The rear weight of the car is carried by a group of smaller rollers mounted on balancing arms, pivoted on a central lever, which distributes the weight evenly on each roller. An interesting development, incorporated in the latest models, is that the idle pulley carries part of the rear weight.

The steering system is identical with that in ordinary wheeled cars. This has been found to be altogether preferable to having any mechanical connection between the steering wheel and the bands, such a system having proved useless owing to the tendency of the bands on very soft ground to dig themselves in, especially on a transverse slope. Both front wheels and propelling pulleys are equipped with extra-powerful brakes, as the machines are able to negotiate very steep grades, sometimes ranging up to 100 per cent. Engines, clutches and gear-boxes are of the standard type. The rear axle is specially built to give a very high ratio; it includes a planetary gear set to increase the said ratio.

As already mentioned, there were two types of caterpillar cars—(1) the normal heavy type, for the China group; (2) the mountain type, for the Pamir group. Each group consisted of seven cars. As regards the light Pamir cars, it is sufficient to say that they were four-passenger open cars, equipped with four-cylinder engines. The latter had two types of cylinder head, one with an increased compression ratio for high altitudes. Each car hauled a trailer, with the exception of an eighth extra car, nearly similar to the China group model, which was equipped with a powerful radio set.

In the case of the China group, the Kegresse system was simplified by the substitution of two small weight-carrying rollers for the customary four, these two rollers being so mounted as to counterbalance the idle pulley which was thus made to carry half of the rear weight. The bands of stiff canvas impregnated with rubber were reinforced on the

outside with steel bars, bolted transversely to them. To avoid harshness of motion, each bar was fitted on top with a piece of hard pure rubber; these bars also ensured the transmission of the power as they caught in spurs, machined on the outer rim of the propelling pulley. In front of each car, a large roller was fitted to help the machine out of deep ditches. The principal details are as follows:—

Weight of each car, about 4½ tons;

Weight of each two-wheeled trailer, 1 ton;

Six-cylinder 50-h.p. engine, with water-cooled sparking plugs, nitralloy crankshaft, aluminium connecting rods, special fan and air cleaner, mechanical governor;

Double ignition and twin batteries;

Four-speed gear-box giving a maximum speed of 20 miles an hour.

Each car carried three detachable tanks and about 140 gallons of petrol; the feeding system was electrical, both for distribution and intake. The coachwork was a semi-closed body made out of duraluminium, seating five passengers including the driver.

All chassis being identical, the cars were equipped with different types of bodies:—

Normal bodies:—

Management car No. 1;

Scientific car No. 2;

Workshop and medical car No. 7.

Special bodies:—

Light sound picture car No. 3;

Heavy sound picture car No. 4, with the recording system in the trailer;

Radio-car No. 5, with a short-wave 500-watts stationary equipment, range 4,000 miles; a portable 400-mile range equipment; and a special collapsible antenna mast;

Kitchen-car No. 6, with petrol pressure-fed ranges, allowing cooking to be performed while the car was running.

The recording machinery had to be fitted into a very limited space, and protected against vibration and dust; but everything worked satisfactorily in spite of the Gobi sand which is so fine that it even clogged our watches.

Each trailer, except No. 4, carried a collapsible tent, the frame of which, made out of steel tubes, pivoted on the roof of the trailer; it had also special beds enclosed in a water and dust proof casing. Electric light from the batteries was available in the tents; there was a complete water system for washing, also an outfit of collapsible tables and chairs.

Our clothing was devised both for tropical and ice-cold conditions. Every member received a regular army rifle and an automatic pistol; a few Mauser convertible pistols were also at hand; in case of emergency, each group carried four automatic rifles mounted on tripods; once or twice they were found handy.

THE TWO GROUPS

M. Haardt decided that he would take the lighter equipment and part of his staff[1] from Beyrut to the lower Pamir mountains, where they would be met by the heavy equipment and thus brought to their final goal, namely the Yellow Sea; the latter travelling to the appointed rendezvous under its own power from the Far East. So the itineraries selected for the two groups were:—

(*a*) *Pamir Group*: Beyrut—Irak—Persia—Afghanistan—North of India—Kashmir—the mountain Passes through Himalaya, Karakhorum and Pamir—thence down to the city of Kashgar, in Western Chinese Turkestan.

(*b*) *China Group*: Tien-Tsin—Nankow Pass—the Mongolian plateau—Kalgan—across the Gobi desert—Pei-Ling-Miao, the lamaic city—westwards through the grassy and rocky Gobi—along the river Edsin-Gol—Suchow—the passes between the Gobi desert and Sin-Kiang Province–across Sin-Kiang through the oases of Pichan and Turfan—Kashgar, via the Toksun pass, Karashar and Aksu.

In point of fact, this group had to alter its course in Turfan and turn North to Urumtsi, the seat of the Sin-Kiang Government, where it was practically jailed for four months, until some of its cars were allowed to go and meet the Pamir group, though not beyond Aksu.

THE JOURNEY OF THE PAMIR GROUP

On 4th April, 1931, the Pamir group started from Beyrut, and on the 7th entered the Lybian desert, thence it made for Baghdad, 500 miles ahead. There the group crossed the river Tigris before ascending the first buttresses of the Iran plateau, the trail climbing slowly from about 200 feet to 7,000 feet. Through Hamadan and Kazvin, the group proceeded to Teheran, where a remarkable official welcome was accorded to it.

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[1] The staff included the eminent archæologist, Mr. J. Hackin, Principal of the Guimet Museum; the painter, Alexandre Iacovleff, already distinguished for his drawings made during the "Black Cruise"; the historiographer, Mr. Georges Le Fevre; one cinema producer and his assistants; and a surgeon Doctor Jourdan. The National Geographical Society of Washington sent with us a well-known traveller, Mr. Maynard Owen Williams.

After leaving Teheran, the group struck a hard trail through moors and swamps until it reached the second holy city of Islamism, Meshed. This town is visited by thousands of pilgrims and there many devoted Mahomedans cause themselves to be buried.

The border of Afghanistan was crossed, and the group reached Herat. A few difficult river crossings had to be negotiated, but our cars were specially equipped for this and everything went well. The Afghan King, H.M. Nadir Shah, sent six lorries, full of official personnel and material, to meet the Pamir group.

On arriving at Kabul, the expedition was welcomed by thousands of natives. From there the expedition staff paid a visit to the valley of Bamyan, where, throughout the centuries, innumerable supporters of Buddhism have made pilgrimages.

On the 17th June, the Pamir group left Kabul and reached the Northern plain of India, crossing the Khyber Pass. At Landi Khotal, General Sandeman welcomed M. Haardt with a review of the garrison. Peshawar was reached, next Rawal-Pindi, and at last Srinagar and the Kashmir mountains, where, on 24th June, the expedition was welcomed by H.H. the Maharajah.

The easy part of the itinerary was now over. M. Haardt, moreover, was now warned by the Indian Government as to possible difficulties arising in China, the Nanking Government having just withdrawn its permit for the group to cross the border of China. Nevertheless, he decided to ascend the high mountains and, at the same time, immediately started negotiations to obtain a renewal of the authorization for himself and his staff to proceed. In Srinagar, M. Haart, after meeting Colonel V. Gabriel, who had just completed the survey of the different roads, also decided that the only practicable route would be the Burzil pass, 12,000 feet high. Next, the Karakorum would be ascended, then the Pamir mountains, through the Killik pass; afterwards, the itinerary lay through Tashkurgan, the first Chinese garrison, then on to Kashgar and the Tarim plains.

Owing to difficulties as to supplies, the whole caravan had to be divided into three sub-groups. The mountain trail was exceedingly narrow and the curves which overlooked the valley at a frightful height had to be negotiated very carefully. Another difficulty lay in the bridges, which would hardly carry the weight of the cars, so that all crossing were achieved with no passenger on board, the steering being performed by means of ropes attached to the steering wheel and controlled from the banks. Sometimes, also, recent storms had washed the trail completely away, so that the cars had to be dismantled and their parts carried by coolies over the impassable places. This happened particularly between

Astor and Doyan. In the Burzil pass the expedition found deep snow. At times, the members of the staff and the mechanics worked twenty hours a day.

Eventually, the expedition reached the Gilgit pass. Here M. Haardt received news by wireless of the internment of the China group. Being eager to join it as soon as possible, he decided that, in order to save time, the cars must go back to Srinagar and that he would travel by local means.

On 10th August, he arrived at Hunza, and at the end of that month the Pamir group reached the China border at Misgar. On the 22nd of September it crossed the Killik pass, where the frontiers of China, India, Russia and Afghanistan all meet. From that point began the descent towards the plains of China, through Tashkurgan and Kashgar, which was reached on 19th September. Thence on to Aksu, where it arrived on 11th October, where it was met by four of the big cars sent in advance by the China group still imprisoned in Urumtsi.

The Journey of the China Group

Now let us trace briefly the westward march of the China group. On 25th March, 1931, the mechanics of the Chinese section had arrived, under my guidance, at Tien-Tsin, where Point already awaited us; our equipment was unloaded on 29th March and tuned up. In the meantime, Point had completed all official arrangements with the authorities and concluded the agreement whereby eight Chinese were to accompany us. On 6th April we left Tien-Tsin and arrived at Kalgan on the 24th, having crossed the difficult Nankow pass and the Great Wall.

We left Kalgan on 16th May, where the populated country ended. From here our real adventures began. All mail communication with France was interrupted for many months, so that our wireless, which was our only communication with the outside world, became a fundamental necessity. Between Kalgan and Pei-Ling-Miao, the scenery recalled that region of the Sahara between Uargla and Inifel, without, however, the extraordinary glamour of the sun. The weather grew overcast, the wind icy, everything grey and monotonous.

On 18th May, we crossed the border of Mongolia. The cars deployed in battle formation among the green and yellow tufts stirred by the desert breezes, but we only sighted some wild horses which galloped off into the limitless plain. The trail was marked by the bones of animals, picked clean by vultures and whitened by the whirling sand; also by an occasional dying camel, abandoned by its caravan, round which the vultures were already circling.

On 19th May, at Poul-Tai-Miao, we visited our first lamasery with its buildings painted black and red and relieved by small gilded belfries. On 20th we stopped at Pei-Ling-Miao, where we heard by wireless that M. Haardt counted on reaching Kashgar on 20th July. The Chinese members, in charge of Dr. Tsu-Ming-Yi, arrived on 22nd, and we left Pei-Ling-Miao on 24th to cross the open desert with the cars loaded to their limit.

The Gobi appeared relatively more populated than the Sahara. From time to time we would pass the camps of Mongolian caravans with their hundreds of beasts of burden, horses and camels. The ground became more and more sandy. Sometimes the fierce wind of the Gobi raised terrifying squalls. Driven at lightning speed, the impalpable sand violently electrified our cars; a grave unforeseen danger, since we had, in small cans, over 400 gallons of reserve petrol per car. In the thick air, the camels of the caravans, hitched one behind the other by their tails, travelled on doggedly; the monotonous tinkle of their brass bells still lingers in our memories. Even my old military watch which had crossed Africa more than once was choked by the infinitely fine sand which succeeded in penetrating its two protecting cases. Constant vigilance became necessary to prevent the wireless equipment being put out of commission. Still, we drove on westwards; by night Point fixed our position by the stars. From time to time, in the vicinity of a water hole, where lived strange families, a few "yourtes" appeared. Occasionally we picked up a guide who usually left us at early dawn to retrace on foot his homeward road.

On 6th June, we neared Karakoto, an archeological storehouse; where we found ourselves almost out of petrol and short of food; so Point left with three cars to go to Suchow, about 200 miles ahead, where we had a supply post. On 10th June, he returned after a most difficult trip through the terrible soft sands of the Edsin-Gol and a brush with a group of armed bandits.

Suchow, full of soldiers, was reached on 15th June. A battle had just been fought and difficulties with the local authorities forced us to remain there until the 21st. Learning that the route through Ansishow and Hsin-Hsin-Shia was not safe, we again loaded up our cars with extra petrol and went back into the Gobi. Grave difficulties now confronted us. By wireless we learnt that the Governor of Sin-Kiang objected to our Chinese delegation entering his territory, although our agreement with the Nanking Government imposed on us the obligation of taking them with us. Furthermore, we learnt that a violent Mussulman rebellion had broken out in Chinese Turkestan directly on our route.

On 21st June we were again in the heart of the Gobi desert. The heat was terrible, our thirst was great, intensified by mirages of blue lakes. The mountains, black in the distance, when close up, tone to ashen grey streaked with yellow-like bubbles in fermenting dough. The water in the radiators was almost boiling. The engine oil rose to 120°C., our wireless functioned less regularly, but nevertheless, brought us the news, on 27th June, of M. Haardt's arrival at Srinagar. On 28th, we finally reached Sin-Kiang, the object of our efforts, and at once noticed houses pillaged from top to bottom. Before reaching Hami, we had to pass under the close fire of Mussulman and regular troops. To our great regret, we had to leave in Hami, then on the verge of capture, our friend Petro, who was to hasten the arrival of one of our supply caravans and would, in the meantime, repair a disabled lorry.[1]

We left Hami early on 30th June, and that very evening the beautiful garden that had served as our camping ground was sacked from one end to the other. During the night, between 1st and 2nd July, the rebels came and encircled our camp, but did not attack us. On the next day they barred the road but made way for us when shown a Mussulman safe-conduct that Point had the foresight to obtain in Hami. The oasis of Pichan was reached on 4th July.

At Turfan, we stayed under strict military guard from 5th to 17th July, without any news from Point, whom the Governor had called and detained at Urumtsi. The summer heat was terrible, 50°C. in the shade and 80°C. inside the metal boxing of our cars. The nights were stifling hot, and dysentery made its appearance. When we arrived at Urumtsi, Point had installed us in the " Forest of Resistance " and here we had to remain until 6th September, while negotiations to obtain the approval for us to continue our trip towards Kashgar were proceeding. On 11th August the Chinese delegation left us for Peking via the Trans-Siberian Railway.

At the beginning of September, the Mussulman revolt spread towards Urumtsi. After Point had made a dangerous trip along the rebel front, the Governor, through the intervention in our favour of the Soviet Consul at Urumtsi, at last consented to let four of our cars leave under the leadership of Father Theilhard de Chardin, to meet M. Haardt, but not to go further than Aksu, where they arrived on 22nd September.

THE MEETING OF THE GROUPS

On 10th October, the Pamir group met them and on 25th M. Haardt, worn out but still full of energy, greeted, at Urumtsi, those who had come so far and waited so long to meet him.

[1] It was not until three months later that Petro escaped with the repaired lorry, and he almost lost his life from thirst in the desert.

But winter was rapidly approaching, and over 3,000 miles still lay between Urumtsi and the Pacific coast. Due to the delay, it was now impossible to avoid the icy cold of the desert. In Urumtsi the expedition had to wait six weeks to get its passports from Governor King and to make ready for the difficult journey, while we knew that countless highwaymen were preparing to capture our small group of forty men in hopes of a huge ransom. On 30th November, the expedition left for Turfan, crossed the pillaged zone and reached Hami where all passports were taken away by General Tchang. After a week of negotiations we started again; but our supply post at Ansishow had now to be avoided because the Mahomedan General Ma-Tchoung-Ying was awaiting us there to seize our motor-cars and wireless equipment.

The expedition re-entered the Edsin-Gol district, sending by night for the petrol which had to be unearthed from under the noses of the sentries who were supposed to guard it. In Suchow, the Chinese officials detained the expedition, and we discovered that our supplies had been stolen. On the 1st January, after having recrossed the Chinese Great Wall, we arrived at the city of Liangshow.

Thenceforward, the expedition made its way along the Yellow river, from Nin-Shia to Paotow, obtaining help from many Christian Missions.

The weather was most unpleasant and the cold bitter—30°C. below zero. It was impossible to use the tents; night and day the cars had to be kept going in order to prevent the engines from stopping; otherwise they would have frozen solid. Everybody slept in the cars which I had equipped, in Urumtsi, with felt and fur covers, and also with some sort of primitive hot air heating system derived from the fan and the radiator. The most unpleasant ordeal was making such little repairs as were necessary, because the mechanics could not work with their gloves on, while the skin of their hands stuck to the cold metal.

THE JOURNEY'S END

At length, on 9th January, we reached the Yellow River, where the trail was found to be impassable. So the cars had to be embarked on a raft, but in three days, we only made two miles, and that after a most dangerous crossing on the too-thin layer of ice. Still, Nin-Shia was reached. Then came the Mongolian desert, and Pei-Ling-Miao again. At last, on the 12th of February, we arrived at Peking, where Marshal Chang Hsue-liang and all the European Residents warmly welcomed us at the French Legation. After a few days rest in that city the expedition sailed from Tien-Tsin for Hanoi, in French Indo-China.

On 14th March Haiphong was reached, and the members of the Mission awaited in Hanoi the arrival of M. Haardt who, with several

members of his staff, had gone to Shanghai in order to visit the Yang-Tse. But he fell ill during the sea voyage from Shanghai and was forced to disembark at Hong Kong, where, on 15th March, he died suddenly from infectious pneumonia.

When the sad news reached M. Citroën, he at once decided that, on account of the death of the leader, the remaining itinerary would be cancelled. Thus, on 4th April, the members of the expedition embarked for home, exactly one year after the departure from Beyrut.

PERSONAL IMPRESSIONS

When travelling across Central Asia what struck me above all was the fact that such a trip was not really a journey forward through space, but an exploration backwards through time ; that is to say it amounted to an extraordinary plunge into the medieval past. Obvious differences being taken into account, a survey of Central China enables the traveller to understand what Europe must have been like about the XIVth century, with its feudal divisions, its great independent noblemen perpetually fighting each other, its generals who omitted to pay their troops and failed to obey any authority as soon as promoted, its big gangs practising as a regular trade a sort of commercialized banditry, its racial and religious factions, its precarious communications disturbed by robbery, and its arbitrary taxes levied at every district border ; and above all, the total ignorance and indifference of the peasant class. Still, the fundamental difference from our own middle age is the lack of a common and fervent creed ; nothing else exists in China beyond the egotistic pragmatism of Confucius, which amounts to a complete text book for practical morals, mingled with the hazy conceptions of the taoïst theology; mixed up with it are superstitions, really childish, but all the more deep rooted. The lack of a faith in common is here replaced by the link of language and writing to the superficial knowledge of which a full lifetime would hardly be sufficient.

Let me quote a few paragraphs from my notes :—

23rd March, 1931—Harbin (Manchuria) : " The city has been conceived on a broad plan and really includes four different towns with a total population of about 400,000 inhabitants ; no such things as street survey and sewers ; yet we find electric lighting, modern hotels, street-cars, automobiles, nearly all of American make. In winter, the cold is bitter, down to −45°C. The surroundings are still unsafe ; about five years ago, Tongouse robbers nearly kidnapped the French Consul and a missionary who was with him . . "

24th March, 1931—Mukden (Manchuria) : " There the Japanese railway has its junction with the Chinese one. The French Consul takes

me for a ride across the Japanese section of the city. Everything seems to be built and arranged according to American standards, even the lamp-posts; Japanese mimetism is here obvious; such characteristics are not so evident in the European section, and the native section has no character at all. One is struck by the enormous expanse of this city of about 500,000 inhabitants. We drive around the walls of the Chinese arsenal for at least two miles; there, 1,800 workmen are supposed to manufacture 'approximately' arms and ammunitions for the Chinese Army. I say 'approximately' because this degree of accuracy is here deemed quite sufficient; for war is not considered as the technique of killing people, but as the art of frightening one's enemy. When a city is besieged, the surrounding troops are never so close that at least one gate is not left free. A General who, under such conditions, is able to sustain a six months siege without surrendering is said to be a first-class warrior, if only because he has not, from the start, tried to run away. In the open field, the apex of military skill is the turning motion which is never completed; in the course of its execution, each marching wing counts its forces and the weaker one retires; such is the rule of the game."

6th May, 1931—Peking: "It seems to be impossible in China to achieve anything at all because of the language itself, in which, practically, it is not permissible to say 'no' to anybody; usually an interpreter requires about a quarter of an hour to refuse or deny something to a native. As the language is not really the same all through the enormous empire of 400,000,000 inhabitants, the palaver is, so to speak, a time-honoured institution; which makes it rather difficult to admit the possibility of a national unity, and the more so because of the weak and hazy character of the so-called Central Government. The European influence is impeded by the enormous pride of the Chinese people, who despise at heart everything European and do not seem to be able to discard their paralyzing language and writing; the result is an arbitrary and barren intellectual hierarchy, which gauges the brain according to its capacity of transforming itself into a dictionary, just as if we were to give the first prize for mathematics to the scholar who knew by heart the maximum amount of formula—an attitude which is exactly opposite to scientific reasoning. Our mental tendency to generalization is probably the most contrary process to Chinese thinking. The latter is fond of intricacies, of unsolved and obscure conceptions, and the cultivation of word ideas. Still, these people are obviously clever; they manage to obtain our diplomas and pride themselves on it. But, practically, they have no use for it all except to get official promotion.

Now about bandits:—"They are probably the best organized corporations in China. They seem to have spies everywhere, even within

the banks, in order to know the accounts of everyone ; within the police force—which is quite natural, and also within such official circles as surround the local governors. Each one of these spies has a financial interest in the plunderings . . ."

Just a few quotations about the Mahomedan upheaval : " During our compulsory sojourn in Urumtsi, I was given the unforeseen chance to study at close quarters some of the reasons for the dangerous situation in which we were unwillingly involved . . . It appeared to me that this upheaval was more or less a crisis of panislamism ; the Mahomedan elements in Sin-Kiang are called Dunganese, that is, Chinese Mahomedans, Shantus, or Turkish Mahomedans, Sartes, Kalmuks, and so on, who represent 95 per cent. of the whole Sin-Kiang population, against 5 per cent. only of genuine Chinese people. It was a kind of war for freedom, as the Chinese officials were levying excessive taxes, and, besides that, did not even try to develop the country which has noticeable wealth, consisting of kerosene, gold, iron, coal, to say nothing of its quite important agriculture.

" The position of the Sin-Kiang province on the map of Asia is most important, due to the fact that it is a buffer between Afghanistan, China, Soviet Russia and India, so that the future of Sin-Kiang is of great interest, both to England and Russia.

" It seems that Russia, having gained control over Outer Mongolia without fighting for it, is also trying to spread Soviet ideals in the Mahomedan districts ; wherefrom it might be concluded that the Shantu insurrection has possibly been fomented by Moscow.

" In the Sin-Kiang province, the Russian policy is mostly commercial ; the Mahomedan traders are given extensive credits, in exchange for which they are compelled to sell certain manufactured goods coming from Russia. Important developments are centred on the only fast road connections for commercial products, that is the northern road ; practically, all caravan connections between Sin-Kiang and the East ceased when the gangs of robbers resumed their activities.

" Such a position gives Russia a first-class contact with Inner China and enables the Soviet Government to monopolise locally all the raw materials ; it offers also an important strategical position in the middle of Central Asia."

The expedition could not complain of the help obtained from the Russian Consul as soon as he obtained the necessary authorization from Moscow ; for, in many instances, we then found the Chinese officials much more tractable. Personally, when travelling from Urumtsi to Tchuguchak, I was unexpectedly jailed in the city of Manas for three days without

warning and for no reason at all, and might possibly be there still, if I had not wired my case to the Russian Consul in Tchuguchak, who was probably responsible for a quick settlement of my rather unpleasant position.

A last detail I witnessed with my own eyes– the first landing in the Sin-Kiang province of a Russian aeroplane. Negotiations are actually in progress as to the aviation equipment of Sin-Kiang with both Russian and German firms. A few years ago, the German Lufthansa Co. had already tried to get such a monopoly from the Sin-Kiang officials. Recently an American representative from the General Motors Corporation was endeavouring to get another monopoly for the supply of motor transportation, but he was detained for months in Urumtsi and, finally, met with complete failure.

RESULTS OF THE EXPEDITION

Our strenuous efforts, although partly curtailed by Mr. Haardt's premature death, have resulted in a good many interesting items, which may be outlined as follows :—

Geography.—Mapping of our new itinerary across the Gobi desert, and geodetic corrections to some points of Sir Aurel Stein's own maps, particularly in the districts of Wuni-Wusu and Kara-Koto.

Archaeology.—Comparative studies in Afghanistan and Chinese Turkestan, of Greco-Buddhist art and the deciphering of some important manuscripts.

Geology.—General synopsis and detailed study of the geological structure of the Gobi desert and Sin-Kiang province, thus connecting and completing the previous work of noted geologists.

Ethnography.—Hundreds of portraits of natives in all Asiatic countries, ranging from the Mediterranean Sea to the Pacific Coast. Thousands of black and coloured pictures by our photographic staff. 50,000 yards of silent and sound film, which form a priceless documentation about Inner Asia and some forms of civilization which are fast disappearing.

Natural History.—Survey of plants found on the Mongol pleateau. Some of these plants are particularly noticeable for their capacity for resisting dryness, and were considered with the view of their possible introduction into Morocco, Australia, and the American deserts. Collections of herbs and insects of the Gobi desert, and collections of mountain birds made in the Pamir district. A profound study of the transformations of animal life according to the variations of climate and dryness.

Medicine.—Chinese surgery, medicine and pharmacy, together with some local diseases, were recorded by Dr. Delastre, who particularly

studied what is known as "Acupuncture," in other words, the science of healing by means of slightly pricking with special needles some very carefully selected zones on the human body. Chinese doctors, centuries ago, had mastered this technique, from which sometimes they seem to derive astonishing results.

Meteorology.—A complete record of meteorological conditions during the westbound course of the China group, and observations about the electrical effects of sand-storms and velocities of winds. Also differences in propagation of short-wave wireless telegraphy, according to wave-length, altitude, hygrometry, relative locations, were carefully noted down, and some of the zones of silence for short-wave telegraphy were at least partially outlined.

General Documentation.—Data collected about the traits and folk-lore of many Asiatic tribes.

To us all, it proved a wonderful experience, not only from the technical viewpoint, but also and mostly on the human side. It afforded us a chance to come in contact with the representatives of ancient and secluded civilizations and also with the gallant pioneers, soldiers, colonists and missionaries, who are trying to establish a permanent contact in order to spread, in a most unfriendly atmosphere, European knowledge, charity, and civilization. This was to us a great example and also a great encouragement to withstand all the hardships which we had to endure in the course of our expedition.

DISCUSSION :

COLONEL O. L. MATHIAS : I should like to ask the Lecturer two questions. On the northern bank of the Oxus, where it forms the north-eastern frontier of Afghanistan, there are certain so-called Soviet republics ; did the Lecturer see any indications of attempts to spread that form of government southwards over the river into northern Afghanistan.

My other question is this. The Lecturer said the caterpillar type of Citroën car was able to overcome all the mud that was encountered. I have often seen cases in southern Persia where all forms of transport, except river stern-wheelers, have been brought to a complete standstill, and it has even been impossible for an aeroplane to take off, because the wheels went round and round in the mud. I should like to know if the Citroën vehicles overcame conditions of that kind.

THE LECTURER :

With regard to the first question, I did not take part in that portion of the trip. With regard to the second, there are cases where no form of land transport can move ; it is not possible to extricate oneself out of soft mud, whereas it is always possible, given sufficient surface of the caterpillar bands, to negotiate any form of hard mud. We had to meet that extensively, not during the Asiatic trip but in Africa, and especially along Lake Kenya and in Tanganyika, where we

always found it was possible to get out, provided there were two cars. A single car, left to its own devices, is liable to get hopelessly stuck, but with two cars we always found it possible to extricate ourselves from any mud that we met.

THE CHAIRMAN:

THE CHAIRMAN in his summing up said that this Citroën Expedition might be regarded as a triumph not only of forethought and care in planning, but also of determination in execution, and execution in the face of phenomenal difficulties, not only physical difficulties but the perhaps even greater difficulties which can be produced by the Chinese mentality. It reflected the greatest credit on the Citroën Company, on their engineers and on all those servants of the firm who carried through so difficult an enterprise.

The customary votes of thanks to the Lecturer and Chairman were carried by acclamation.

THE PROBLEM OF AN ATLANTIC AIR SERVICE

By Lieutenant J. H. N. Kenworthy, R.N.R.

FOR a decade and a half, with ever increasing success, stout-hearted pioneers have been venturing their skill and aircraft manufacturers' scientific knowledge in Atlantic flights. To-day, it is evident that we are within measurable distance of a regular commercial mail and passenger service, from Europe to America. Indeed, it may be said that such a service already exists, for the New York papers now advertise bookings through the Hamburg America Line for an air passage from that city to Europe. The passenger takes an American aeroplane to Akron, Ohio; there he joins the "Graf Zeppelin" for Spain and Germany.

France is building her giant "Bleriot" flying boat for trans-oceanic work, and the United States the great "Sikorsky." The latter are also reported to be building seadromes, to have secured the landing rights in Iceland for a period of seventy-five years,[1] and to be negotiating for similar rights in the Azores.[2] Germany has already established the depot ship "Westfalen" on the South Atlantic inter-continental route. Britain, whose welfare, security and prestige are so vitally connected with sea communications must not lag behind in this matter of developing air transport over the ocean routes. There is good reason to believe that the proper authorities are fully alive to the situation, and are concentrating on the practical problems involved. The chief of these are weather and how to provide adequate refuelling depots.

Up to date, three alternative routes have been suggested for a North Atlantic air route:—

(1) The direct route from London to New York;
(2) The Southern route, via the Azores and Bermuda;
(3) The Arctic route.

The main object of this article is to propose a fourth route, which, it is believed, has not yet been considered, but which, it is claimed, would be vastly superior to any of the above.

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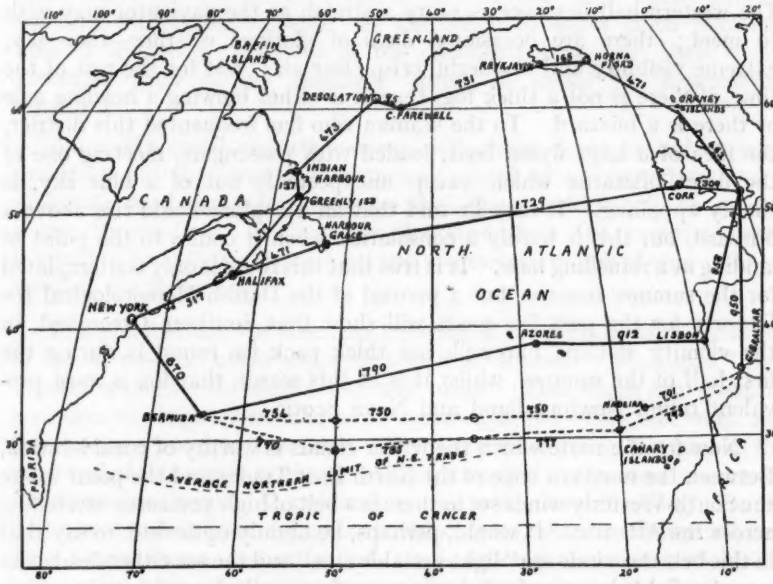
[1] Vide: Flight-Lieutenant Gray, R.C.A.F., writing in *Maclean's Magazine*, 1st June, 1933.

[2] *Flight* January, 1934.

But, first of all, let us examine the three routes which have so far, found popular favour :—

(1) The direct route runs from London to Cork in Ireland, thence to Harbour Grace in Newfoundland, and so to Halifax and New York. It follows the Great Circle track, and is decidedly the shortest, being 3,026 nautical miles or 3,485 statute miles in length. Nevertheless, it entails a water crossing of 1,700 nautical miles over one of the stormiest patches of water on the earth's surface. On this route, too, the weather is consistently bad for eleven months in the year and, even in the short



ATLANTIC AIR ROUTES

summer, aircraft might have to wait weeks for favourable weather. The prospects for a flying boat to be able to land on the sea and refuel on this route are nil, and the possibilities of a land machine utilizing a ship with a landing deck are not very much greater. When an aeroplane can be designed strong enough to face any weather and able to carry a pay-load as well as sufficient fuel for a 1,700 mile hop, then this direct route may be possible, but not until then.

(2) The route via Lisbon, the Azores and Bermuda is 4,230 nautical or 4,871 statute miles, and is also on the fringe of the bad weather zone. Fogs are quite frequent round the Azores, and the water crossing is over

a portion of the Atlantic that is far from being free from North Atlantic gales, and where high seas are quite common.

(3) The Arctic route is the most favoured, because of the short sea hops: 731 nautical miles between Reykjavik and Cape Farewell is the longest. Colonel Lindbergh surveyed this route last year, but as far as the writer knows his report has not yet been made public. According to reports in the Press, however, the route he has mapped out appears to be from New York to Halifax, thence to Greenly Island, Indian Harbour, Desolation, Cape Farewell, Reykjavik, Horna Fjord, The Orkneys and London. The total distance is 3,578 nautical or 4,120 statute miles. The western half lies over as nasty a stretch as the navigator may wish to meet; there are occasional days of glorious weather—blue sky, extreme visibility and wonderful crisp clear air; but for the rest of the time, if there is not a thick fog, then it is either blowing a howling gale or there is a blizzard. To the seaman who has frequented this district, the idea of a large flying boat, loaded with passengers, meeting one of the fierce blizzards which sweep unexpectedly out of a blue sky, is simply appalling. It may be said that an aeroplane could rise above a blizzard, but this is hardly a consolation when it comes to the point of landing at a refuelling base. It is true that this route is only contemplated for the summer months, but a perusal of the Danish Meteorological Ice Reports for the past few years will show that Southern Greenland, in the vicinity of Cape Farewell, has thick pack ice round it during the first half of the summer, whilst it is at this season that fog is most prevalent round Newfoundland and Nova Scotia.

Now for the route which the writer claims is worthy of consideration. Between the northern edge of the North East Trades and the point where the South-Westerly winds set in there is a belt of high pressures stretching across the Atlantic. It would, perhaps, be unduly optimistic to say that in this belt the winds are "light variable airs," and the sea either dead calm or only slight, because fresh breezes are frequently logged here by ships, and even minor depressions sometimes invade the area. It can, however, safely be said that in this area good weather is the rule rather than the exception, whilst farther North it certainly is very much the exception rather than the rule.

This question of a fine weather route is all the more important when we come to consider the problem of refuelling. Up to the present time the airship is the only form of aircraft which can carry a paying load across the Atlantic in one continuous flight; but, since the disaster to "R101," the lighter-than-air craft is so mistrusted by the British public that it is to the heavier-than-air type we must look for a popular means of air transport. The refuelling of a land-plane or flying boat in mid-

ocean is not an easy proposition; the former requires a large floating platform, which must be reasonably steady for landing on; the latter, a stretch of fairly smooth water and the shelter of a refuelling vessel of some kind. In both cases arrangements have to be made to enable the aircraft to fly off again.

In the United States there is a project for huge landing platforms to be stationed between the Azores and Bermuda, but it is feared that those who advocate such contrivances have very little experience of an angry Atlantic sea. It is safe to prophecy that their life would be very short indeed in this area. Even in fine weather they would have to contend with ocean currents, for the depth of water alone puts any idea of anchoring them out of the question; moreover, their design precludes their having sufficient speed to avoid an approaching hurricane.

Ships like naval aircraft carriers, with flying decks, would be more practical, but they would have to be so large to accommodate even a moderate sized passenger aeroplane that they would hardly be an economic proposition. In fact, for the land-plane the problem seems insolvable, both from the practical and commercial points of view. There remains the flying boat.

It is possible that the Germans have found the solution of the problem of the flying-boat ocean depot ship in their steamer "Westfalen," now experimenting on the Bathurst-Brazil route. This vessel can steam at a moderately high speed, and tows a canvas apron—fifty feet wide, and two to three hundred feet long. There are athwartship battens at the after-end of this apron so that it is kept stretched in the same manner as a Chinese junk's sail. It produces a wide wake, smooth enough for the flying boat to land and taxi up to the ship's stern, where it is lifted inboard by a special crane, and re-fuelled. It is claimed that this method has been tested with complete success in all weathers in the North Sea, and that a Swedish cruiser has, by the same means, picked up a flying boat whilst proceeding at full speed. There seems no reason to doubt these claims, provided there is only a broken sea and no swell at the time. The idea holds great possibilities both for mail-planes and for war aircraft; it therefore behoves British interests to watch the experiments very carefully and closely. The great disadvantage of the "Westfalen" system is that for flying off, the aircraft has to be catapulted into the air, and it is very unlikely that passengers will relish this operation.

In a lecture at the Institution some little time ago, Sir John Thornycroft described his design for a special type of flying-boat carrier, with a long, broad deck, sloping into the sea over the stern, and a flying-off

deck forward.[1] This would enable a boat to land in the smooth water of the wake of the ship and, using an apron if necessary, taxi up to the stern, where it would be hauled on board. The vessel, as it was described, would only provide a flying-off deck for quite a small aircraft; but possibly this design might be developed.

There remains the possibility of the flying boat landing and taking off from the surface of the open sea itself; but, except on isolated occasions, this would be impossible on any of the routes hitherto projected. The writer believes, however, that on the route he advocates a large flying boat, long in the keel and with the clean lines and absence of struts of the modern metal monoplane, and stub planes instead of wing floats, could generally accomplish this. In any case, he is confident that improvements in design will make it possible long before aircraft will be able to fly the Arctic or Azores route to a scheduled time-table.

He suggests that one or two experienced flying boat officers should be given opportunities to obtain personal experience of this proposed route. If their report is favourable, it is proposed that fast vessels of the destroyer type should be stationed along the route as depot ships for a service of flying boats. If there were three such depot ships:—One in Lat. 32° N., Long. 20°—30′ W.; one in Lat. 32° N., Long. 35°—15′ W.; and one in Lat. 32° N., Long. 50° W., there would be gaps of 750 nautical miles between them; 791 miles between Gibraltar and the easternmost ship; and 753 miles between the westernmost ship and Bermuda. London to Gibraltar is 950 miles, and Bermuda to New York 670 miles; making a total of 4,664 miles. In actual fact, the distance would be a little greater as passengers would not fly direct from London to Gibraltar, but would probably make a detour to Paris and possibly Marseilles or Bordeaux, in order to take advantage of the established airways. Also, it might occasionally be necessary to fly somewhat to the southward to avoid the tail end of a northerly swell. The southernmost track shown on the chart would add another 101 nautical miles to the distance.

Now it may be objected that the proposed course is considerably longer than the Arctic route, and somewhat longer than that via the Azores. That is true, and, if we assume an average speed of 100 m.p.h. the journey would take about 54 flying hours as compared with 41 and 49 hours, respectively. But the real question is, not which is the shortest route, but rather which is the most practicable one, bearing in mind the old principle, that a mile and a half over a good road often proves to be quicker than a mile over a ploughed field, with a few hedges and ditches thrown in.

[1] See "High Speed Craft for Naval Uses" and photograph of a model of this craft in the JOURNAL for August, 1931, p. 581.

It will be noted that, although the route passes over Madeira, this has not been suggested as a stopping place, the object being to keep the whole of the actual trans-Atlantic portion of the service under British control.

As regards the depot ships, it is proposed that they should be fitted with powerful long and short wave W/T. transmitting sets, by means of which touch would be kept with the aircraft during the whole of their flight. A wireless network would also be organized between the depot ships and merchant vessels in the vicinity for the former to obtain meteorological data, and warnings of approaching bad weather, especially hurricanes; a hurricane travels at a rate of about 300 miles per day, and as far as ships' reports will allow, it is plotted continuously.[1]

The depot ships would need sufficient fuel and storage capacity to supply the aircraft as well as cater for their own needs. A relief or visiting ship would also be required. Fuel would be passed to the flying boat by means of a small, easily handled, pipe line.

It may be objected that these depot-ships would be a heavy charge on the operation of the service; but, in practice, their initial cost and regular up-keep ought to compare very favourably with that of ten refuelling bases and W/T. stations on the Arctic route. Moreover, the ships, with their technical organization would be able to move at high speed to the scene of any emergency which might arise.

Sir Eric Geddes has already announced the intention of Imperial Airways in co-operation with Pan-American Airways to establish air lines from Bermuda to New York during the present year. With a trans-Atlantic air service, such as that which has been outlined, passengers would travel by ordinary air-liners from London or from various places in Europe to Gibraltar, thence by flying-boat in stages to Bermuda, where, again they might pick up a choice of services to various parts of the United States.

[1] The American Hydrographic Office Pilot Chart for September, 1933, shows the hurricane tracks for the previous thirty-two Septembers; seven are plotted East of Bermuda across our route; one centre passes over Bermuda itself, and nine pass between Bermuda and New York. About one third of the year's hurricanes occur in September, so a simple sum will give us the approximate frequency of about one in eighteen months either side of Bermuda.

UNIFORMS OF THE BRITISH ARMY

By MAJOR H. FITZM. STACKE, M.C., *p.s.c.*

PART II.[1]

LECTURE

THE PENINSULAR PERIOD

IN 1808 a British expeditionary force under Sir Arthur Wellesley was sent to Portugal: the beginning, as it was to prove, of the Peninsular War. The troops embarked for that campaign in the uniforms already described, the officers wearing cocked hats and the privates in the new shako. Before landing in Portugal orders were issued to cut off pigtails. Old customs, however, die hard, and it is recorded that in the first action of the campaign, Rolica, the commanding officer of the battalion which led the attack went into action with "his hair powdered and queued, his cocked hat placed on his head square to the front, in fact accoutred in the strictest accordance with the King's Regulations"; but he was killed in that action. Powder and pigtails thenceforward disappeared, and throughout the campaign Sir Arthur Wellesley allowed his officers great freedom in matters of dress. He himself always wore the dark frock-coat, which long survived in the Army as an undress uniform for officers.

In the Peninsula the British Army fought for five years against the French armies, which had immensely improved their appearance since the ragamuffin days of 1793. The French infantry had adopted a shako, rather like our pattern, surmounted by a plume in front. Their *chasseurs-à-cheval*, light cavalry, wore a very similar style of kit, while most of the French hussars wore much the same type of shako. This similarity of headdress proved confusing, especially at night, so when the campaign was some two years old a new type of shako was evolved for our infantry, with a raised front and a plume at the side, quite different from that of the French. Also the old white breeches and black gaiters were exchanged for loose grey trousers and short grey spats.

[1] For Part I of this Lecture see p. 779 of the JOURNAL for November, 1933.

The date of introduction of these grey trousers is somewhat obscure. There is evidence, however, that they were tried experimentally by certain units in the Walcheren Expedition of 1809; apparently three regiments, the 28th and two others, experimented by mutual agreement between their C.O's., with different patterns, the conclusion reached being that the pattern tried by the 28th was the best of the three. Later, after the beginning of the Peninsular Campaign, letters from officers at the front, still in existence, recommended newcomers to bring grey trousers for service in the field. The official authorization only came in 1811; but this almost certainly only confirmed existing custom.

In general, the five years of continuous fighting and marching in the Peninsula made our infantry kit and equipment thoroughly practical for the warfare of the period, just as the experience there gained taught the efficient tactics which led our battalions to triumph at Waterloo. One branch which earned special distinction was the Light Infantry. The 43rd and 52nd of the original " Light Division " were followed later as " Light " regiments by the 51st, 68th and 71st, and these " Light " regiments, like the light companies of the other regiments, all wore the distinctive short jacket with wings on the shoulders, while their shakos were adorned by dark-green tufts and cords and a silver bugle badge. Their admirable conduct and the skill with which they combined the loose tactics of skirmishers with the highest discipline earned for them such prestige that for many years afterwards it was considered a fit honour for distinguished work in the field for a regiment of the normal Line to be converted into Light Infantry.[1]

Equal distinction was earned in the Peninsula by the other form of Light troops, the Rifles. The 5/60th, already described, did so well that after the campaign was over the previously raised red-coated battalions of that regiment were eventually converted into Rifles and given green jackets; while after Waterloo the 95th Rifles were taken out of their place in the Line, increased to four battalions and renamed the Rifle Brigade.

The cavalry also changed their dress during the Peninsular campaign. The uniform of the French light cavalry was, for some reason, considered more practical than that of our Light Dragoons, who were completely re-dressed on the French model. The new kit was sent out from home and taken into wear in the field, so that the puzzled French, who found brand-new uniforms appearing opposite their outposts, thought they were dealing with entirely different regiments.

[1] Thus the 32nd were made Light Infantry as an honour after the defence of Lucknow and the 31st Bengal N.I. after their loyal defence of Saugor.

The heavy cavalry underwent an equally complete transformation. The French Dragoons were found to be wearing a metal helmet with horsehair crest, which fitted the head better than the British cocked hat and provided more efficient protection. The Austrian Cuirassiers had similarly adopted helmets of classical shape in 1796.

These helmets of Greco-Roman shape developed from the classical revival of the XVIIth century, through which all contemporary statues of such monarchs as Louis XIII of France and even our William III showed them attired in Roman armour, although with flowing perukes. The previous steel helmet worn by the heavy horse and the pikemen of the early XVIIth century had been discontinued by all armies soon after the year 1700, and the crested classical helmet seems to have been reintroduced only about 1745, when it appeared as the headdress of a corps of irregular cavalry in the French service called the *Volontaires de Saxe*, formed by the famous Marshal of that name. So famous became that corps that all the Dragoon regiments of the French army copied their costume, much as the Light Dragoons of the British army copied the uniforms of Colonel Tarleton's "Legion." Thereafter this classical helmet was retained by the French Dragoons, gradually increasing in size.

The British Dragoons were now re-dressed with helmets of pattern similar to that of the French, while the Household Cavalry received helmets resembling the Austrian pattern; both were issued also with short jackets braided like those of the Prussian Cuirassiers—a curious mixture of styles. These changes were introduced just after the battle of Salamanca, and the uniforms thus altered then remained without further changes till the end of the war.

From Waterloo to the Crimea

After the battle of Waterloo the occupation of Paris brought our war-worn uniforms into sharp contrast with those of Austria and Prussia, which were adjudged far superior in decorative effect. It was decided that the British Army must be able to meet its allies on equal terms; so during the next few years our regiments were completely reclothed in the most splendid but most unpractical of uniforms. The Foot Guards had fought during the war in small shakos like the rest of our infantry; but the Austrians had given their massed battalions of grenadiers a heightened fur cap, a truly impressive headdress; Napoleon's Grenadiers of the Guard had even larger bearskins. At Waterloo the British Foot Guards had met and defeated those famous French soldiers, and to commemorate that victory it was decided that our 1st Foot Guards should be entitled "The Grenadier Guards," and should all wear bearskin caps. The Coldstream, never willing to take second place, soon

afterwards also obtained permission to wear the bearskin cap; and the 3rd Guards followed suit. Thus originated the fur caps which the Foot Guards still retain to-day.

The Prussian Guard, however—an even finer body of troops than anything Austria could show—were wearing immense shakos with tall plumes. To compete with the Prussians all the British infantry were given similar shakos, together with heavily-braided coatees and light-blue trousers pleated after the fashion of the Russian cossacks.

Our heavy cavalry were so impressed by the Austrian Dragoons, who wore a huge classical helmet of brass above their elegantly simple white uniform, that it was decided that the British Dragoons should counter this display with an even larger helmet. Not to be outdone, the King of France took the same helmet for his Cuirassiers of the Guard; in reply the British Household Cavalry were given by George IV not only a cuirass but also a bearskin far larger than any seen before or since.

Our Hussar regiments likewise loaded their jackets, their accoutrements and even their breeches with every inch of gold lace for which there was room. A little later they exchanged their fur cap for a heavily embroidered shako with a great drooping plume. The Hussar officer of 1830 turned out in what was probably the most elaborate uniform ever worn in any army.

The only one of these innovations which had any semblance of a practical purpose was the introduction of lancers. The lance had died out in Western Europe after the middle ages, but had been retained by the light horsemen of Poland and the cossacks of Russia. After the partition of Poland, regiments of Polish Uhlans were formed in both the Austrian and the Prussian Armies, and in 1807 Polish regiments were taken into the French service.[1] The prestige acquired by the Russian Cossacks enhanced our respect for the lance as a weapon; moreover the Polish Uhlan uniform with its square-topped Polish cap was very decorative.

So, during 1816, three British Light Dragoon regiments, the 12th, 16th and 23rd, were armed with the lance and dressed in the Polish costume—the two ideas being apparently inseparable. Other Light Dragoon regiments followed this example later. The uniform given to these regiments was closely copied from the corresponding regiments in the French and Prussian armies; thus attired our new Lancer regiments were to make themselves famous at the battles of Aliwal and Balaclava.

[1] The British infantry made a bitter acquaintance with Napoleon's Polish Lancers at Albuhera.

Even Generals were not neglected during this period of gorgeous costumes, and their cocked hats became of the most imposing size, adorned by George IV with drooping swans' feather plumes.

With the advent of King William IV these gorgeous uniforms were sobered down. The Dragoons received more modest helmets, reverting to the French pattern with a horsehair crest; incidentally, it was from these that our fire brigades drew their inspiration. The infantry coats were deprived of their laced lapels, and they, together with nearly all the rest of the Army, were then given a simple double-breasted coatee with huge epaulettes. The infantry shako was reduced in height, stripped of its gold lace and fitted with a worsted ball tuft in front instead of a plume. But when Queen Victoria came to the throne it was still too heavy for comfort. Other armies, faced with the same need for a more practical kit, were lightening their headgear. The French had reverted to the original "stove-pipe" form of shako, while the Austrians had introduced a peak at the back as well as in front. Combining these two models, the Prince Consort in 1843 evolved the "Albert" shako, which the British infantry was destined to wear in the Crimean War.

In spite of all improvements, full dress was still much too cumbrous a costume for purposes of drill and field service, and a variety of undress kits, such as the frock coat and forage cap, were introduced. In addition, both officers and men were given short "shell-jackets" of scarlet. The officers took to wearing these jackets open with a decorative waistcoat in mess, thus originating the present-day mess-jacket.

In India during the 'forties this shell-jacket was worn on active service with the forage cap and a white cap-cover. This was the kit worn by the 22nd (Cheshire) at Meanee, by the 13th (Somerset) at Jelalabad and by some of the British regiments engaged in the Sikh Wars. As a result of those campaigns the British dominion in India was extended to the present North-West Frontier, and to guard that frontier there was created during the next few years the famous Punjab Frontier Force, whose units were the first in the British Army to wear khaki.

In 1854 there broke out the Crimean War, when for the first time in forty years a large force was sent overseas from this country against a European enemy. On this occasion our troops went out as part of a joint expeditionary force, British and French. The two allied armies were astonishingly different. Since Waterloo the British Army had not fought except in India, and in the intervening years the Army at home had grown stiff and rigid in every way; so had their uniforms. Even the Light Infantry, supposed to be the most mobile troops of the Army, were expected to skirmish in tight-waisted long-tailed coatees, heavy

cross-belts, tight trousers and tall shakos; they still wore leather stocks under their chins to keep their heads up.

The French, on the other hand, during the previous twenty years had been engaged in almost continuous fighting in Algeria against a very mobile and resourceful enemy; and they had developed a more practical and serviceable dress, consisting of long, loose-fitting tunic and baggy trousers. The stiffening had been taken out of their shakos, and these had sunk down and sagged forward until they formed the light *képi*, which remains the headdress of the French soldier to-day. The costume of their zouaves, with short blue jacket and very full trousers, was also suited to rapid movement.

The Era of Reform

In the Crimean campaign the French army showed to infinitely better advantage than the British forces in regard to everything except mere bravery; so when the war came to an end there arose a popular clamour for a thorough reform of the Army. In that process the old uniform was swept away. Coatees, cross-belts, epaulettes and stocks all went by the board; and our troops were re-clothed in a uniform modelled on that of the French. In the Foot Guards the bearskin cap was reduced in size; the tunic was made looser and the trousers more baggy. The infantry of the Line changed in the same way and were given a much smaller shako tilted forward after the manner of the French headdress, from which the well-known postman's cap, familiar down to the present day, was derived; officers sashes were now worn over the shoulder instead of round the waist. All ranks were fired by a passion to grow large whiskers, which sometimes developed into veritable beards.

Even the Hussar regiments were shorn of most of their plumage. The gorgeous kit of the Hussars—in which Lord Cardigan rode at the head of the Light Brigade into the "Valley of Death"—short jacket covered with gold braid, slung jacket lined with sable, and "barrelled" sash of crimson and gold, was superseded by a very much simpler type of jacket copied from the Hussars of the Prussian army, and not dissimilar from that of the original Hussars of the XVIIth century. This has since remained the accepted uniform of our Hussars to the present day. That simplified pattern of hussar jacket was, of course, also adopted by the officers of our Rifle regiments, and spread from them to the new Volunteer Rifle Corps, which were formed in large numbers in 1859–60 and which have since developed into our Territorial Army.

The only type of uniform not essentially altered after the Crimean War was that of the Highland regiments. There the sole change made

was the replacement of the old coatee and epaulettes by the doublet. The high feather bonnet remained unchanged, and remains to-day perhaps the most picturesque and the most fantastic headdress in any army. One other effect of the Crimean War may be noted here, the adoption of the Zouave costume (although with colours reversed) by our West India regiments.

For fourteen years after the end of the Crimean War the French army remained the model which we sought to copy; and every change in French uniform was faithfully followed by our Army. In 1860 the French brought in a new shako, smaller, more tilted forward and with an absolutely flat peak. Promptly, in 1861, we altered our shako to correspond. Six years later, in 1867, the French still further reduced their shako, altering the ornamentation; and again, in 1868, we followed their lead. These small tilted shakos were, however, only parade headdresses; they were destined never to be worn by British troops in action.

Meanwhile the storm of the great Mutiny had swept across India. That revolt was essentially a mutiny of the old Bengal Regular Army of the East India Company, which was a somewhat uninspired copy of the pre-Crimean British Army, dressed in a very similar uniform, with similar coatees, cross-belts and stocks. It was only the Regular Army of Bengal which rebelled; the so-called "Irregular" cavalry of the Bengal Army, together with the "Irregular" troops on the North-West Frontier remained loyal to us, and participated in the suppression of the Mutiny. When it was over the Army in India was recast on new lines, taking the old "Irregular" troops as the model, on which the new Indian Army arose from the ashes of the old. One article of equipment worn by the old "Irregular" cavalry was to spread from India to the whole world; this was the belt of brown leather fathered by that famous old warrior of the Frontier, General Sam Browne.

To return to Europe: just as the XVIIIth century was symbolized by the three-cornered hat and the first half of the XIXth century by shakos, so the second half of the XIXth century was destined to be characterised by helmets. About 1840, when all armies were abandoning the big bell-topped shako and seeking a lighter headdress, our own Army took to the "Albert" shako, but the Prussians in 1843 struck out an entirely new line and evolved a strange new headdress, the spiked helmet or *pickelhaube*. Its first form was somewhat high and ungainly, but during the next twenty years it became gradually lower and lighter. Some other countries copied it; Russian troops wore a version of this helmet in the Crimean War; but generally the *pickelhaube* was regarded as an ugly and odd headdress. When worn in silver by the Prussian

Cuirassiers, however, it looked well enough; this form was copied in 1846 by our heavy cavalry and has been retained by them ever since.

Meanwhile another form of helmet was coming independently into existence—the white pith helmet, first used apparently by explorers and missionaries in Africa and Southern Asia. Some specimens of this headdress were worn by British officers of irregular troops during the Mutiny, notably by Hodson of Hodson's Horse, and in 1858 a white helmet was authorized for the first time to be worn by officers in hot climates. This first white helmet had a crest rather like that of the Dragoons of 1840, as may be seen from contemporary pictures of the storming of the Taku Forts in 1860. Rather before that period, a third type of helmet had been evolved, namely, the blue helmet of the London policeman.

During the 'sixties, while explorers and policemen all over the world were adopting helmets for their peaceful avocations, the Prussian *pickelhaube* was becoming year by year more grimly military. Between 1845 and 1865, as the power of Prussia grew, the size of the spiked helmet diminished. In 1866 the Prussians beat the Austrians at Königgrätz. That victory spurred the Prussians to even more intense efficiency, and their helmets grew even lower and more bristling, until in 1870, when they swept over the French, that headdress became the symbol of triumphant efficiency.

That event shook the British Army, for it became obvious that a low tilted shako was no longer the outward sign of the really clever soldier. So, after thinking about it for seven years, in 1878 we evolved our own form of spiked helmet, made something like the white helmets worn overseas, yet resembling the blue helmet of a London policeman; but set off by adornments copied from the Prussian army—a brass spike for the infantry, but for the artillery a metal ball. It cannot be said that this headdress was popular, even in its earliest days, for its shape was by no means becoming; but it was light and well-balanced, and so long as the German Army remained our model the blue helmet continued to be the full-dress headdress for the greater part of our Army, worn frequently on ceremonial parades but never in battle.

The foreign service helmet of much the same style had a rather more pleasing effect, because its stark outline was softened by the puggaree. This helmet was to become familiar through the long series of minor campaigns in India and the Colonies which took place between 1878 and 1900.

The Age of Small Wars

One leading feature of this period is the long conflict between two schools of thought, the practical and the traditional, which were typified

respectively by Sir Garnet Wolseley and the Duke of Cambridge; and the dress of the Army underwent minor modification in either direction as each alternately gained the upper hand. In the end Sir Garnet Wolseley became known as a ruthless innovator, but the first of his military successes had its effect on full-dress uniform. Throughout the XIXth century British troops were stationed in Canada, where during the winter months, after Canadian fashion, they had worn caps of dark fur. In 1867, a minor rebellion in the far western provinces of Canada was quelled promptly and with a minimum of bloodshed by a well-managed little expedition under Sir Garnet with a force largely drawn from the 60th Rifles; and it is from the fur caps worn by the 60th on that expedition that we can apparently trace the origin of the smart fur headdress of the Rifle regiments to-day.

Again, in 1873 it became necessary to send an expedition to Ashantee on the Gold Coast. Once more Sir Garnet Wolseley was selected for command, and he shocked the opposing school of thought by clothing all his small force in a special costume of grey tweed invented by himself, a dress much resembling in cut our present Service dress. Had it not been for a personal want of sympathy between the protagonists of the opposing schools of thought, the British Army might have evolved a satisfactory working dress fifty years sooner; but Sir Garnet's contempt for all traditions antagonized the old Commander-in-Chief, who could not be persuaded that long-range rifles and smokeless powder made red coats unsuitable for the field. Consequently, throughout the period 1860–1890, efforts were being made to evolve a kit which, while preserving the red coat, was yet practical for field service.

For a time the shell-jacket was retained, and was worn with what was then called the "Kilmarnock" cap; this jacket and cap had actually been worn in the later actions of the Crimean War, notably at the assault on the Redan. Then, in the 'seventies, was introduced a loose red serge jacket, worn first with a low peaked cap which descended afterwards to railway porters. Subsequently, however, the Scottish "glengarry" came into fashion and was issued to the rank-and-file of all Line regiments.

When a British expeditionary force was sent to Egypt, again under Sir Garnet Wolseley, in 1882, the rank-and-file wore the red serge jacket while the officers had a similar jacket, but made with an open neck.

Indian khaki, however, was obviously a more suitable colour and weight for that land and temperature, and khaki was substituted for red during the subsequent operations. But the red coat was worn once again, and that for the last time, in the Sudan campaign of 1885, in which the Royal Berkshire Regiment won their unique distinction—the

only British regiment of the Line who have been made "Royal" for service in the field. Actually the last battle fought in the red coat seems to have been the action of Ginnis in December, 1885.

So long as the Duke of Cambridge remained at the Horse Guards, however, the red coat was still worn for training at home. Officers in the last years of the XIXth century were wearing a red serge jacket with the "field-service" cap, copied from the Austrians, then replacing the "glengarry," and the Sam Browne belt, which was already adopted for work in the field. At this period the undress kits of officers were varied in the extreme, heavy cavalry wearing a frogged frock coat like the Foot Guards, while Hussars affected a similar jacket edged with astrakhan fur.

The Service Dress Period

The South African War of 1899–1902, brought back for a time, the oldest headdress of our Army, in the shape of the slouch hat; which was almost identical in form with the hats of the period of William III. Otherwise the principle effect of that war on uniform was that it showed the deadly effect of modern fire and the necessity for effective concealment of troops in action. After that war the red serge jacket disappeared, and during 1902–3 the present Service dress was introduced. Overseas the memory of the victor of Tel-el-Kebir has ever since been preserved by the Wolseley helmet, which was the fighting headdress of our troops in all hot climates during the late War. At home, however, the slouch hat of South Africa was soon replaced by a model taken from the Germans, the peaked Service dress cap.

The introduction of Service dress had its reflex effect on full-dress uniforms, which henceforward were to be confined to ceremonial parades and "walking out." Since the introduction of the red serge jacket as a working dress during the 'seventies, full dress had by insensible degrees been smartened up; and in 1903–10 some minor improvements were made; for instance, the sash of officers of infantry regiments was put back round the waist, instead of over the shoulder.

The Great War, when it broke out in 1914, found the British Army dressed in a fashion far more suitable for modern warfare than was that of our French allies, who went to battle in their parade uniforms of blue and red and, as General Spears has recorded, considered that our officers' dress, with its soft collar and tie, implied an attitude of unworthy levity towards the serious business of war. However, our kit, if not exactly decorative, was at any rate practical; and it remained virtually unchanged, with only such modifications as were suggested by war experience. The complicated cuff badges of our officers were replaced by simpler badges on the shoulder; while the hard flat top

to the cap—the only thoroughly unpractical feature of our dress—was softened, almost from the start, by the removal of the supporting wires. Later in the War came trench coats, trench boots and steel helmets; but these need no detailed description.

The most definite novelty added by the War to the uniforms of the British Army was the beret borrowed from the French *Chasseurs Alpins* by the Royal Tank Corps. It may be of interest to note that for their new full dress at levees that corps has been authorized to wear the black beret adorned with a small plume of the corps colours—red, brown and green; this is, I believe, the first occasion on which a regimental tie has been represented in full dress. Another very recent improvement, as announced in an Army Council Instruction, is the forthcoming substitution of the old fore-and-aft field service cap for the rather unsightly "cap, soft, service dress" for wear on training and manœuvres.

During the War our kit was extensively copied by our Allies; for the first time in history the British Army was setting fashions to the world. Our Belgian Allies paid us the compliment of adopting all the main features of our dress. The French, the Italian and the American armies borrowed the Sam Browne belt. Since the War the United States have gone even further, until the present American officer's kit closely resembles our own except in minor details. Literally from China to Peru soldiers of nearly all armies are clad in shades of what is now universally, though erroneously, called "khaki"; while they wear peaked caps, leather gaiters and the Sam Browne belt. The shade of that gallant frontier warrior must be grimly amused at some of the innumerable people who wear his belt to-day.

Still, our Service dress has its defects, and in the last few years a War Office Committee has been studying how best to achieve a more practical and more comfortable dress for service in the field. As is now well known, an experimental dress is now being tested at Aldershot by selected units. It may be of interest to note that, as will be seen from comparative photographs published in German newspapers, there exists a striking likeness between the designs of the British experimental kit and the newest uniform of the German army. Once again, as so often in the past, soldiers of different countries are tending towards the same ideas in dress.

Meanwhile such of us as find inspiration in our Army's traditions must be grateful that a part at least of the pageantry of past days is still maintained in London by His Majesty's Brigade of Guards; and that on certain occasions we can still see the Yeomen of the Guard and the recently revived Pikemen of the H.A.C. marching according to the ceremonial of Tudor and Stuart days.

So far as the rest of our Army is concerned, service dress is still the rule rigidly enforced; and though the band and drums of our battalions have been issued with full dress for wear on certain occasions, they have not so far been permitted to wear them when parading with troops. But there is one exception: one distinguished regiment of the Line is allowed, for a special and a very good reason, to parade once a year with band and drums in red, with the front rank of the drummers dressed in the costume worn at the battle which that parade commemorates. It is difficult to avoid reflecting that at present we are not using so much as we might the great store of potential inspiration which lies in those past uniforms of our Army, and one is tempted to dream of the value to regimental spirit if each battalion, even if itself clad in service dress, could be led on to parade by a band and drums dressed in the costume of that regiment's most famous battle.

Conclusion

In this all too brief outline I have only just skimmed the surface of the subject. I have made no attempt to deal with the intricate details of regimental distinctions, facings and lace; with the costumes of drummers, drum-majors, buglers, pipers and bandsmen. I have omitted all reference to horses, their saddlery, and shabraques; to the uniform of the Scottish Lowland Regiments; to the tartans and other details of Highland dress and the distinctive uniform of the Highland Light Infantry; to weapons, accoutrements, sabretaches, cloaks and greatcoats; to the complications of badges and buttons; to distinctions of grade and rank, gorgets or epaulettes; to colours, standards, guidons, pipe-banners and colour-belts; to the obscure subject of forage-caps and the endless modifications for drill and active service; to the financial side—off-reckonings and Colonels' perquisites; to the administrative side and the Army Clothing Department. These are all side-tracks, which cannot be explored in the time available.

It will be realized that any adequate history of our Army's dress must be difficult to compile; but it is possible, and some day I hope it may be carried through. It would require, however, much devoted work and willing collaboration, besides a certain expense. Meanwhile I would plead that at least a beginning should be made by some index of the existing information concerning this subject, so that the knowledge acquired by living experts and collectors may not be lost. To that end I would hazard a concrete suggestion, namely that in some centre such as the Library of this Institution there should be commenced a card index or some similar system of filing, in which could be recorded the available evidence as to the past uniforms of our regiments, existing specimens, existing portraits, and relevant old prints. Such an index

could be enlarged as more evidence becomes available, so that eventually it would form a catalogue from which enquiries could be answered authoritatively, while it would form a sound basis for an eventual good history of the uniforms of the British Army. It is true that such an index, if it is to be of value, would need supervision and annotation by expert hands; but I believe that this expert guidance would be readily and gladly given.

DISCUSSION

The Sam Browne Belt

Sir James Douglas: I would like to ask the Lecturer if he is quite sure of his information as to the origin of the Sam Browne belt. He spoke of it as now being in use from China to Peru, and showed a picture of an Indian cavalryman wearing a Sam Browne belt. But that man was not wearing a Sam Browne belt; it might have been called so, but it had nothing to do with Sam Browne. That belt ought to be called the Chittenden belt.

The present Sam Browne belt came into being as follows. When Sir Donald Stewart was commanding in India in 1884–85, there was reason to think that troops might be sent on active service further north; and the headquarter staff was encouraged to provide themselves with a serviceable belt. A collar-maker, Chittenden, received instructions to make some, and came to me to ask what he was to do about it. So Chittenden and I put our heads together, and samples of the Sam Browne belt were made. I am convinced that this was the origin of the Sam Browne belt. One of my contributions towards it were the braces, and the progenitor of those braces were a pair of rug straps which I utilized at the Zulu War. In 1891 a War Office paper, since lost, took notice of the fact that a brown leather belt was being worn in the Straits Settlements, and to put the matter in order it was authorized to be worn. In 1893 an Army Order came out which extended the authority to use the brown leather belt to Egypt and the West Coast of Africa. In 1898 an Army Order was issued making it a universal service pattern for the Army, and the writer of the Order called it a Sam Browne belt as a play on the word "brown." That is my history of the Sam Browne belt, and I hope the Lecturer will follow it up.

The Lecturer: I am most grateful for this information regarding the Sam Browne belt. It only confirms my argument that there should be some definite centre where all such information can be collected.

Captain R. Steele: I have an interesting print of the white round hat of the period about 1780 worn by the artillery in India. There are a number of little statuettes in the Scottish Museum at Edinburgh which show this hat.

The Lecturer: Any information with regard to that white hat worn in the XVIIIth century is very valuable. I had the opportunity of discussing the point with the artist who made the Scottish statuettes, and he stated that his information on the point was not very precise. I also talked over the matter with Mr. Reynolds, perhaps the greatest expert on the subject, who said he was not convinced that we know the form of white hat then worn by the British infantry. Even if a certain form of it was worn by the East India Company's artillery, it does not follow that the same form was worn by British Regular regiments, although that is, of course, quite possible.

The Bugle Badge

Captain J. Neville: Is there any evidence to substantiate the wearing of a bugle horn by Light Infantry previous to 1814. This actual badge was authorized in 1814, but I have never traced any evidence that it was worn earlier.

The Lecturer: I cannot be certain of the date when the bugle badge was introduced, but the fact that the actual piece of equipment, the bugle horn itself, was worn is quite definite. Pictures dating round about 1778 show the bugle horn quite clearly, and I think there is no doubt that it was worn from the very inception of Light Infantry as an article of equipment. Whether an embroidered bugle horn was actually worn on the wings in the early days I am not prepared to say. There is a specimen in this Museum which shows the bugle horn on the shako of the Peninsular War period, but it would be difficult to assign an exact date to it. It is one of the shakos made after the 1806 specification, but one cannot be quite certain when that silver bugle was put on.[1]

The White Waistcoat

Captain H. E. Holme, R.N.: It has been stated that the full dress of a naval officer was copied from the full dress of the Royal Artillery about the beginning of the XIXth century. Is that so?

Before the War the Guards and Highland Regiments used to wear a white-sleeve jacket. Was not that based on the old sleeve jacket which was a common dress in XVIIIth century times?

The Lecturer: With regard to the white-sleeved jacket, I am not certain as yet of its origin. Undoubtedly the Guards, in common with most other regiments, wore a white waistcoat during the latter half of the XVIIIth century. Whether that survived as a separate garment, or whether a new jacket was adopted after Waterloo, following the same pattern but copied from the Austrians, I am not certain. The Austrian army certainly wore a white jacket, very like the one worn subsequently by the Guards and Highlanders, at the period of the occupation of Paris. This, again, is a matter which requires research.

With regard to the first point, as to whether the full dress of the naval officer was copied from the Royal Artillery, I should have said that the full dress of the naval officer, the costume of the Royal Artillery, the costume of Lord Lieutenants of that period, and many other uniforms, were all standardised about 1830, when the double-breasted coatee was introduced. Had I not confined myself to the Regular Army, I would have pointed out, when dealing with that period, that this double-breasted coatee was a general pattern of uniform adopted by practically all Services at that time. The whole Infantry, Guards and Line, wore it, in red; The Royal Artillery, Naval Officers, and Lord Lieutenants were given it, while practically all holders of any official position, including the officers of the Yeomen of the Guard, wore it. I think it should be regarded as a general official pattern of dress rather than one copied by one Service from another.

Captain H. J. Harrison: With regard to the white jacket of the Guards, a jacket of this type seems to have been worn in some armies, because in the days of the long skirted coat it was the practice to wear the waistcoat without the coat for drill order: in the French army before the Revolution the Guards wore their

[1] In the Museum there is also a helmet of the 90th Light Infantry worn by Colonel (afterwards General Lord) Hill at the battle of Mandora in 1801. This helmet bears a large bugle badge in gilt metal.

waistcoats for drill order without the coat on top, with the result that the regiment of French Guards, who wore blue coats with red waistcoats, in drill order wore their red waistcoats, and the Swiss Guards, who wore a red coat with a blue waistcoat, appeared in drill order in blue waistcoats only. There may have been some similar practice in our own Army, although I cannot recall any period when our infantry wore white waistcoats: they generally wore a waistcoat of the same colour as the coat or the facings.

The Lecturer mentioned 1885 as the date of the last occasion of the wearing of scarlet by the infantry in the field. I think, however, that in 1896 in the Ashanti Expedition the infantry wore scarlet serge jackets with khaki breeches and helmets, while the Rifle Brigade, or King's Royal Rifles, wore green with khaki.

There is one curious instance of a foreign army borrowing one of our articles of uniform. I cannot vouch for the actual fact, but in an official handbook of the Bavarian Army Museum, which I obtained some thirty years ago, it is claimed that the curious fur-top helmet which the Bavarians wear was derived from the pattern of helmet worn by the English Light Dragoons at the end of the XVIIIth century and beginning of the XIXth century. It is said to have been introduced by a certain naturalized Bavarian, supposed to have been of English extraction.

THE LECTURER: That is very interesting: it is quite certain that at that period all armies were copying each other's kits to a great extent.

One particularly obscure point is the origin of that fur-crested helmet shown in the portrait of Colonel Tarleton. I cannot trace it back with any certainty before 1782. Whether it was adopted by us from a French model or not is at present uncertain.

With regard to regiments wearing white waistcoats, I believe that from 1768 onwards until the closed coatee was brought in at the beginning of the XIXth century, most British regiments had white waistcoats; although the wearing of a waistcoat with a heavy long coat above it was the definite XIXth century practice up to the time when the shortened coatee was brought in about 1798. I think the sleeved waistcoat must then have ceased to be worn under the coat. Up to the late War the French infantry continued to wear their dark-blue sleeved waistcoat with the heavy blue-grey coat above it.

GENERAL SIR ROBERT WHIGHAM: Might I ask the Quartermaster-General if the shako is absolutely dead?

Again, was not the real reason that the gunners wore a ball on the top of their helmets, the fear that in girthing up their horses the spike might not tickle them?

CAPTAIN E. ALTHAM, R.N.: The Lecturer has suggested that we should compile something in the nature of a card index system in order to collect and collate information which has been almost the lifetime's labour of those few specialists in military uniform, and that we should eventually work towards producing a comprehensive history of the subject. If it is to be done at all, this is the place to do it. We are, and have been for over a hundred years, the centre of everything to do with the traditions of the Army, which are so closely associated with its uniforms. It is essential, if we are to carry out the suggestion successfully, to enlist the services of really enthusiastic volunteers, whose labours may be greatly facilitated by proximity to our valuable Library, Museum, and the remarkable collection of military prints recently presented to us by Colonel Crookshank.

We are at the present moment compiling a census of Colours. That alone necessitates much voluntary labour.

THE CHAIRMAN:

One or two questions have been asked about full dress and about the shako. The only answer I can give is that I know of no decision that they are dead. All I can say is that I think they are what we call "on ice," and are likely to be so for some long time. We do not hear very much about dress reform in the Army nowadays. Perhaps the reason is that the Army Council are rather afraid that they might be considered to be frivolous if they occupied their time with matters of dress when there are a great many other and very important matters awaiting their attention. That does not imply for a moment that changes in uniform are not an exceedingly interesting and important subject.

The customary votes of thanks to the Lecturer and to the Chairman were then carried by acclamation.

(*See also* CORRESPONDENCE, p. 161.—EDITOR.)

HIGH VELOCITY SMALL ARMS [1]

SOON after the introduction into all European armies of small-bore rifles firing smokeless ammunition the question of endowing military small arms with a still higher ballistic performance began to be discussed in technical circles. But until the Great War little was done; the various War Departments of Europe and America appeared to rest satisfied with the efficiency of their existing weapons; and so the high velocity rifle did not progress beyond a design or, at best, an experimental stage. Probably not one of the greater armies before the war cared to contemplate a re-armament of their infantry, partly because of expense it would entail, and partly for fear of being caught by an outbreak of hostilities in a state of transition from one model of rifle to another. Until 1914, moreover, the object of most small arm designers was to provide a flat trajectory combined with rapidity of fire. The attack of shielded field artillery by small arms seemed too secondary a consideration to require a higher striking velocity of the bullet. But the advent of the armoured fighting vehicle introduced a new problem.

In Germany, especially, the technicians set to work to evolve a rifle and a machine gun which might permit infantry to cope with the tank on more equal terms. Since then considerable progress has been made in that country in the production of a high velocity rifle, although, as far as can be ascertained, a service weapon, equal in many respects to existing rifles and capable of rendering similar service under similarly arduous conditions has not yet been put into the hands of the troops, or even sent out for service trials. Nevertheless, such a measure of progress has been realised towards the attainment of that goal, that this rifle must now be reckoned with as a potential factor in any war that might be fought in Europe in the future.

It is not only in the design of the weapon itself that the German scientists and inventors claim to have made considerable headway, for the composition of the propellents, as well as the metallurgical processes employed in rifle manufacture have been improved; so much so that if the German claims are literally correct, a new era in musketry may be

[1] This summary has been drawn very largely from the U.S. Journal *Army Ordnance*, to whom due acknowledgments are tendered.

said to be at hand. It is now alleged in Germany that their service powders and projectiles have so far been modified that infinitely better ballistic results can be obtained even with existing weapons. Amongst other advantages, it is asserted, there is far less fouling or nickelling of the barrel than has hitherto been regarded as inevitable. Propellents, such as our cordite, are regarded as being totally out of date. In addition, some substances are now being experimented with whereby it is hoped to arrive at a rapid and simple method of cleaning fouled or nickelled barrels in the field.

So far these various improvements have been made known to the public in the form of the "Ultra" or Halger sporting rifle. In the case of this weapon, speaking from a momentary personal experience, the improvement in ballistic qualities seems considerable. The effect of the bullet on stags, for instance, is astounding. But as a recognised military weapon the Halger rifle exists probably only as isolated specimens undergoing trial at the butts. Nevertheless, for military purposes there is no question that this rifle has already achieved very considerable results on the test range; in particular the perforation of steel plates has surpassed by far that which it had hitherto been considered possible to achieve with really portable small arms. Hence the importance of this new rifle in considering problems regarding armoured fighting vehicles.

In order to understand the subject it will be as well to revert to the beginning of the experiments and to trace the genesis of the high velocity rifle during the present century. This is best done by analysing the most striking facts and data that have been published abroad in various journals. It must be remembered, however, that these reports, probably, do not reveal the full extent of the success that has been attained by the new rifle, certainly in Germany and the United States. Other Powers are unquestionably beginning to take interest in this new weapon.

In 1903, Karl Puff, of Spandau, obtained a patent in Germany for a rifle barrel, the bore of which was tapered, that is it had an elongated conoidal form, from chamber to muzzle. The main object of this barrel was to permit the bullet to present a greater sectional area to powder pressure at the chamber, whilst obtaining greater sectional density on leaving the muzzle. The bullet fired by this rifle was made more or less on the principle of an artillery projectile, that is, it was provided with contractile bands. Colonel Heydenreich, a musketry instructor of the German army, was so impressed with the results achieved by this weapon as to state that, in his opinion, the adoption of the Puff rifle and bullet might revolutionize warfare. Puff then received experimental orders from both the German and Russian governments. Heydenreich believed

that at that moment France might be the first to adopt the new rifle in view of the obsolescent pattern of weapon then in use in the French army. But nothing happened.

Since the Great War, the matter has been taken up by an engineer, Herr Gerlich, who continued working on similar lines to Puff, but with important modifications and still more noteworthy results. The Gerlich rifle barrel is designed in three sections, so to speak ; the first nearest the chamber is cylindrical with a constant diameter ; the second, the middle section, is tapered from chamber to muzzle ; the third is cylindrical and parallel-sided once more. The muzzle section is thus of lesser diameter than the first or breech portion. The bullet is made with two projecting flanges or rings.[1] The advantages of the system are manifest ; on the charge being fired the resistance of the bullet is less than in a normal barrel, while it leaves the muzzle as an elongated perfectly smooth cylinder. The increase of muzzle velocity is somewhere about 100 per cent. and could be increased to 200 per cent. ; Puff's system augmented that velocity by not more than 10 to 20 per cent. The perforation of steel plates is remarkable, while there is also the considerable reduction in the time of flight. Another admirable feature of the Gerlich system is the fact that, owing to the form of bullet and of the first section of the barrel, the gas sealing property is excellent, while erosion is much reduced. On the other hand, that there exist disadvantages in this weapon is quite obvious. In the first place, the barrels themselves are expensive to construct ; the cost of the bullets is also far higher than that of more orthodox types. The cartridge is more bulky, although the Gerlich bullet is actually smaller than those of accepted calibres. Again, the rifles do not lend themselves to firing tracer or similar ammunition. Then there is the possibility that there will be found a type of steel plate that can be made to withstand attack by these new projectiles.

It has been further asserted that, whilst adhering to more orthodox arms, better muzzle velocities could be obtained than is now the rule. The change of propellent might, within fixed limits of safety, be increased so as to give higher pressures. Lighter bullets could reduce resistance. These factors would result in higher striking energy and better armour perforation. Nevertheless, these performances must still fall far short of those obtained with the Gerlich rifle and bullet. In anti-aircraft work there is also the greatly reduced time of flight attained by the latter projectile, which is important.

[1] The actual figures of the bullet were : diameter, 7.78 mm. ; expanded, 9.21 mm. ; propellent, 3.8 grammes ; muzzle velocity, 2,700 ft. secs. ; maximum pressure, 46,000 lbs. per sq. inch.

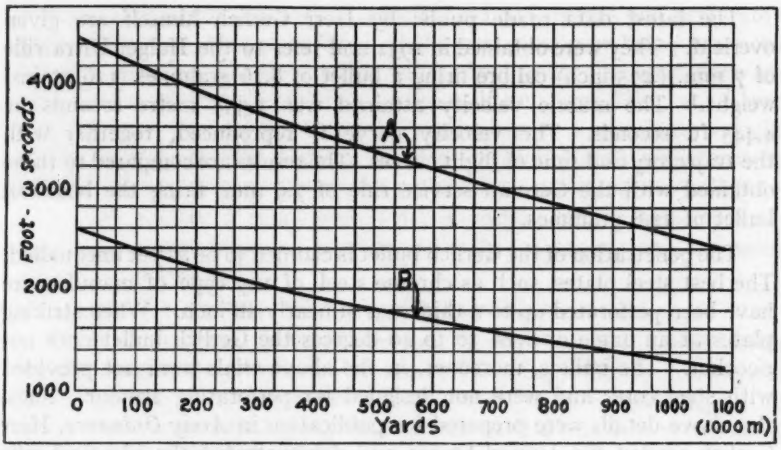


Fig. 1. Comparative Striking Velocities.

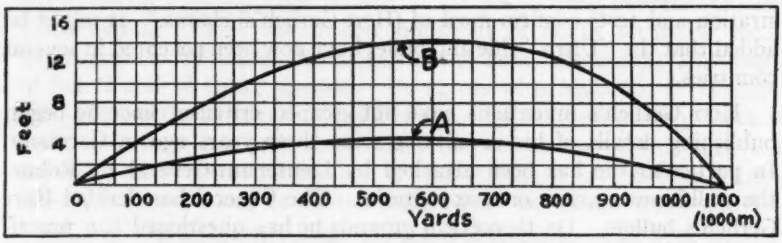


Fig. 2. Comparative Trajectory Curves.

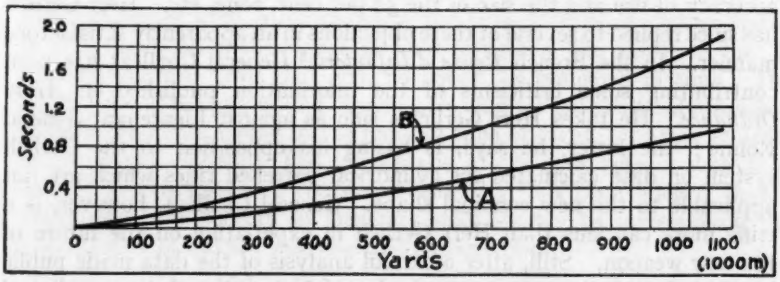


Fig. 3. Comparative Times of Flight.

NOTE.—*In all figures* A *represents the 7 mm. 126 gr. Halger Ultra Bullet;* B *the 7.9 mm. 197 gr. German Service Bullet.*

For details see overleaf.

The latest data made public by Herr Gerlich himself are given overleaf. They were obtained in 1932 and refer to the Halger Ultra rifle of 7 mm. (.275-inch) calibre firing a bullet of 8.16 grammes (126 grains) weight.[1] The muzzle velocity attained was 1,358 metre seconds or 4,445 ft. seconds. The velocity curve is reproduced, together with the trajectory and time of flight curves. The results are compared to those obtained with the German service rifle of 7.9 mm. firing the boat-tail bullet of 12.8 grammes.

The penetration of the Gerlich bullet is claimed to be as yet unequalled. The best steel plates, such as chrome steel, of any type of manufacture have been perforated up to a thickness of nearly an inch. When striking plates at an angle of even 30 to 40 degrees the Gerlich bullet does not ricochet. The bullets, moreover, in the above trials were not provided with steel cores and were not designed for perforating armour. Since the above details were prepared for publication in *Army Ordnance*, Herr Gerlich visited the United States and demonstrated the identical rifle and bullets referred to above on the Aberdeen Proving Ground. "It is understood," states *Army Ordnance*, "that the results of the demonstration and tests confirm most of (Herr Gerlich's) claims." It might be added that the "Ultra" rifle and bullet have now been patented in several countries.

Herr Gerlich's inventions have not escaped criticism since he began publishing details of his inventions some three years ago in Germany. In particular, he has been attacked by Lieutenant-General H. Rohne, the well-known writer on war material. The General has derided Herr Gerlich's bullets. On theoretical grounds he has questioned the practicability of keeping chamber pressure sufficiently low when using the Gerlich system; he calls into question the weight of the rifle; the accuracy of fire and the size of the 50 per cent. zone, etc. Herr Gerlich has since replied to several of these objections in an apparently satisfactory manner. In the French *Revue d'Infanterie*[2] General Challéat has been contributing some criticisms of the information published in *Army Ordnance*. He takes Herr Gerlich's side as against Lieutenant-General Rohne; the latter, he says, is basing his opposition to the Gerlich system on data calculated for cylindrical barrelled rifles which are not applicable to the new conoidal shape. General Challéat, however, is a trifle more cautious than Herr Gerlich in expatiating on the future of the new weapon. Still, after a careful analysis of the data made public by Herr Gerlich, he assumes as a safe conclusion that the new bullet of

[1] The diameter of the compressed bullet can be taken as .25 inch; the diameter of the expanded rings at .35 inch.

[2] For June, 1933.

7 mm. calibre endowed with a velocity of 1,358 metres will perforate a plate of 16 mm., this plate being of the best steel now being produced. He next deduces that the Gerlich bullet, fired under like conditions and at a similar plate, will perforate at least, if not more than, a 7.8 mm. steel plate at 800 metres, this being equivalent to a remaining velocity of 822 metre seconds. General Challéat continues with an interesting theoretical comparison between the perforating capacity of two bullets :—

(*a*) Calibre 7 mm., weight 9.3 grammes, muzzle velocity 1,063 metre seconds, remaining velocity (at 500 metres) 800 metre seconds ;

(*b*) The Gerlich bullet, described above.

From these figures he concludes that the lighter bullet would have a superior perforating capacity of armour at ranges below 500 metres, while the heavier bullet would be more effective at longer ranges. At 500 metres the perforating capacity of both bullets would be round about 10 mm. of steel plate.

General Challéat believes that more exhaustive tests are still needed with various types of steel plating at ranges varying between 500 and 1,000 metres. There are further questions of doubt regarding recoil, the maximum pressures developed in the bore, the weight and length of barrel and of entire weapon. He agrees with Major G. P. Wilhelm, the author of the articles in *Army Ordnance*, that there are many obstacles to be overcome, and it is too much to expect at the present time that anything very revolutionary will be accomplished in the near future ; although this opinion, he admits, may be on the conservative side.

One of the most interesting problems relating to these high velocity barrels is that of their use in machine guns. The German efforts in that direction were, certainly at first, not very successful ; it is rumoured that difficulties were encountered in the manufacture of springs suited to take the recoil of the barrel, this not being of a like nature to that of ordinary barrels. But that will, no doubt, be remedied in time. The importance of the production of such a weapon for the attack of armoured vehicles, and also, owing to the reduced time of flight, for firing at aeroplanes is self-evident. The importance of the new rifle is such that further experiments will continue ; indeed it has been alleged that a well-known rifle factory in Denmark may shortly be undertaking the manufacture of Gerlich weapons and ammunition.

An objection which may be raised against the adoption of these projectiles, on humanitarian grounds, is that their effect on animal bodies is particularly devastating ; indeed it bears some resemblance to that of expanding or explosive bullets.

FRANCE AND BELGIUM, 1914

THE REVISED OFFICIAL HISTORY[1]

By CAPTAIN H. F. GARNONS-WILLIAMS, *p.s.c.*,
The Royal Welch Fusiliers.

VOLUME I of the British Official History was originally compiled by Brigadier-General Sir James Edmonds in 1920-21 and anticipated the Official Histories of France and Germany by several years. While the first edition presented us with a most accurate account of the action of the B.E.F., it was to be expected that its range of vision must necessarily be somewhat limited, and in certain cases blurred by recent events. The revised edition now published more than remedies these handicaps.

General Edmonds has taken full advantage of the publication of the French and German Official Histories. We are now given a far broader view of the events up to the end of the Battle of the Aisne, thanks to extensive notes on the German and French points of view. Moreover, gaps in the narrative of the German Official History have been filled by extracts from numerous German regimental histories.

Fuller details of the activities of the Royal Flying Corps are given, while the results of a detailed investigation of the destruction of bridges during the retreat from Mons are incorporated; the latter work, undertaken by Major-General Sir Reginald Buckland, alone took two years.

The sketches bound with the Volume have been more than doubled, and are now so numerous that the sale of the Volume of Maps may suffer.

Details of Germany's preparations for war are of particular interest. In the original edition statements were published alleging that considerable German troop movements took place before mobilization. The German Official Account denies these and states that no mobilization took place in Germany before 1st August, that the Landsturm in the frontier districts was called out on the same date, the troops employed against Liége were at peace strength, and that movements of men and troops were those made in consequence of the proclamation of "imminent danger of war."

[1] "Military Operations: France and Belgium, 1914." Vol. I. 3rd Edition, (Messrs. Macmillan & Co., Ltd.) 12/6. Case of Maps, 5/6.

General Edmonds quietly refutes the German denial by means of extracts from various German accounts. The official history of the German railways in the War states: "On the same day (28th July) the recall was ordered of all bodies of troops absent from their garrisons, which, on mobilization, should be ready to leave 'at once' or 'at short notice' for the duty of frontier protection, or for certain definite special tasks. The return of all other troops absent on marches or at training grounds followed on the evening of the 29th."

Again, General von Moser (Commander, 53rd Infantry Brigade) states: "On the 29th July early, the order 'return to garrison' reached us on the troop training ground. . . . On the 1st August 'last preparations for taking the field.' On the 2nd August (first day of mobilization) the brigade, reinforced by a squadron and three batteries, left at 9.0 a.m. on frontier protection duty."

At Treis on the Moselle is a war memorial, on which is written "On this spot our first fighting men fell in at 8.30 p.m. on the 31.7.14." As General Edmonds naively remarks: "If the date is correct, these men 'fell in' two days before the first day of mobilization."

Among the captured papers of Herr von Papen (in 1914 Military Attaché at Washington) a letter from Potsdam postmarked 7.0 p.m., 29.7.14, remarks: "We have never before seen such preparations for war as are being made at present."

Under these circumstances, it is not surprising that: "at 1.0 p.m. on the 30th July, the Berlin *Lokalanzeiger* issued a special number, announcing that mobilization had been ordered. The statement was soon contradicted, but it had been telegraphed to Petrograd, and at 6.0 p.m. before contradiction arrived, Russia ordered general mobilization."

The Schlieffen Plan

A critical examination is made of Moltke's attempt to carry out the Schlieffen Plan, which had been drawn up in 1905. General Edmonds points out that: "It was easier to sketch out such an academic plan of campaign than to carry it out in the field, and the unfortunate Moltke was forced to make modifications in it." In man power alone, Moltke started under a grave disadvantage, for on the Western Front in August, 1914, he disposed of 20½ Divisions less than Schlieffen had counted upon. The essence of the Schlieffen Plan was the strength of the right wing; it outnumbered the left by 7 to 1: in 1909 Moltke increased the strength of the left wing from 5 to 8 Corps, and the German Official Account states that thereby he missed the point of the plan, as the proportion was altered from 7 to 1 to 3 to 1. "This does not appear to be quite fair on Moltke, for he had to consider altered circumstances," the increased

importance of the industrial area in the Saar and Rhine Valleys, and his allotment of the extra strength to the left wing was intended to be a temporary measure at the outbreak of war." Indeed, "trains to transport seven Corps to the right wing were in fact collected as a railway reserve, beginning on the tenth day of mobilization." General Edmonds points out that after the defeat and retreat of the French First and Second Armies on 20th August, "six or even more divisions to restore the Schlieffen balance could, from the operations viewpoint, have been transferred from the left to the right wing." Actually, however, this was not possible, owing to the extensive railway demolitions carried out by the Belgians. Not until 5th September was it possible to begin the transport of troops from the left wing via Aix la Chapelle, Liége, and Brussels. The conclusion is that it may fairly be said that "Moltke failed not by 'watering down' the Schlieffen Plan, as is sometimes averred, but by trying to carry it out in its entirety, in the spirit of the originator, without the forces necessary for so vast an operation."

There is no mention of a surprising episode which occurred between 13th and 16th August. According to the German Official Account, O.H.L. learned on 13th August that very strong French forces were concentrated in the area Pont à Mousson–Raon l'Etape, preparatory to a great attack. Moltke was not surprised, for it had been obvious from the French doctrine that they would attack in force somewhere. In his opinion, the German right wheel had now lost its importance; the turning movement had become a meaningless secondary operation. The principal object of the German operations, in his view, consisted in beating the French in the open field. To achieve this object, he proposed to withdraw the Sixth Army behind the Saar, draw the French into the area Metz–Saar–Vosges, and then attack both flanks; the Fifth Army, possibly with the Fourth co-operating, attacking from the Metz area, and the Seventh from the East through the Vosges.

To mount this operation the left wing must be increased. There were available in Germany six and a half Ersatz divisions, destined in the Schlieffen Plan to reinforce the right wing. On 15th August, in spite of Tappen's[1] protests, orders were issued for these divisions to be sent to Saarbrücken and Strassburg.

But no sooner had this decision been taken than fresh news came in on 16th August, refuting, to a large extent, the former reports regarding the French dispositions. The following day, therefore, the orders for the execution of Moltke's coup, so far as they affected the Fourth and Fifth Armies, were countermanded. At 4.30 p.m. on 17th August, the Schlieffen Plan was re-adopted, but though the six and a half Ersatz

[1] NOTE.—Colonel Tappen was Chief of the Operating Sector of the General Staff.

divisions could still have been diverted to the right wing, they were allowed to proceed to their destinations.

Le Cateau

There is little new as regards the battle of Le Cateau. G.H.Q. is severely censured for its deplorable order in withdrawing the divisional cavalry squadrons from the 4th and 5th Divisions, then "absence was a cause of heavy loss to the 4th Division, and hampered both Divisions gravely, in the retreat to the Seine and the advance to the Aisne"; a number of air reconnaissances were made for G.H.Q. during the fighting, but the reports were not forwarded to Sir H. Smith-Dorrien. "They were valuable both positively and negatively." The total German losses are not known, but three regiments of their 8th Division (which attacked our 3rd Division) suffered 1,124 casualties.

As to whether General Smith-Dorrien was right to stand and fight, Sir J. Edmonds states: "In the circumstances General Smith-Dorrien was fully justified in his decision to fight, and he was wise in delaying the retirement to the latest moment compatible with the safety of his force."

G.H.Q. on that evening seems to have given up the IInd Corps as lost: at 8.15 p.m. Colonel Huguet despatched a cipher telegram to G.Q.G., saying that our army had lost the battle and also, apparently, cohesion. The pessimism at G.H.Q. on the following evening is reflected in a telephone message from Colonel Huguet to G.Q.G., that he had gathered that the British Army would not be in a state to take part in the campaign again until after a long rest, and complete re-organization.

Guise

General Spears in "Liaison" has already given an account of the French reactions to Sir J. French's refusal to take part in the battle of Guise. This is now confirmed: "Had the British Ist Corps been permitted by Sir John French to take part in the battle, if only by fire on the German front, whilst the French continued their flank attack, an important defeat might have been administered to the Second Army. In view, however, of the German advance against the French right wing, and the inaction of the British, the movement of the left wing could not be persisted in."

That the German Second Army was hard hit is shown by the fact that, although there were still seven hours' daylight when the French retirement was discovered, Bülow ordered that the enemy should be pursued by artillery fire and infantry detachments, and that the Army should rest the following day.

It was on this day (30th August) that von Kluck made his much-discussed wheel to the South-East, in order to assist Bülow to exploit success against the French Fifth Army. As " the movements of the German right wing on the 30th and 31st August had a decisive effect on the campaign," the cause of the German change of direction is of considerable interest. In his book, Kluck states that O.H.L. approved of his wheel South-East, a statement with which General Edmonds agrees. But an examination of the German Official Account hardly bears this out. It was not until 10.30 p.m. on 30th August that Kluck sent a message to O.H.L. that he intended to wheel South-East. Encoding and other causes delayed its actual despatch until 2.54 a.m., 31st August. What was assumed to be O.H.L.'s reply reached First Army H.Q. at 3.45 a.m., 31st August; it had been despatched before 10.0 p.m., 30th August, and therefore could not have been in answer to Kluck's message. It ran: " Third Army is wheeling South towards the Aisne, attacking against Rethel-Semuy, and will pursue in southerly direction. The movements begun[1] by First and Second Armies are in accordance with the intentions of O.H.L. Co-operate with Third Army, left of Second Army in general direction Reims."

The left of the Second Army was then almost due North of Reims. From the German Official Account it appears that the change of direction of the three right Armies was necessitated by events further East.

Since the 27th the Fourth Army had been encountering strong resistance on the Meuse, and it had asked O.H.L. for the co-operation of the Third and Fifth Armies. In spite of O.H.L.'s orders for a south-westerly advance, von Hausen (Commander, Third Army) complied with Duke Albrecht's request, and directed two of his three corps to turn South-East on the 28th and 29th. On the 30th the Fourth Army continued its advance, and the Third turned South to hinder still further the French retreat. In the early afternoon, von Hausen asked O.H.L. if, assuming that he reached the Aisne that evening between Rethel and Semuy, he was to continue to advance South or, in conformity with Moltke's orders of the 28th (i.e., South-West).

According to Moltke's information, there was now a gap of over 40 km. between the First and Second Armies, and of about 30 km. between the Second and Third. It was therefore out of the question to continue the advance South-West and, at the same time, keep the Allies on the run. The gap between the Second and Third Armies would still be

[1] At about 7 p.m., 30th August, O.H.L. had intercepted an urgent request from Bülow to Kluck, asking the latter to wheel inwards. Though O.H.L. did not know how far Kluck had complied with Bülow's request, they knew, from a message received early on the 30th, that he had already sent one division.

there, and would offer to the Allies the opportunity for a counterstroke. Moreover, the events of the 30th August on the right wing caused Moltke to believe that the best chance of strategical success lay in changing the direction of advance from South-West to South. Accordingly, at 9.10 p.m., he ordered the first three armies to turn South.

There is a great deal of most important new information available regarding the Marne. General Edmonds has already discussed the salient points in a recent article in the JOURNAL, and they will, therefore, not be touched on here.

THE AISNE

It is gratifying to learn that the B.E.F.'s advance to the Aisne, as it had been up to the Marne, was quicker than that of our French neighbours. We now learn that had the French Fifth Army acted more energetically, important results might have been effected owing to the gap between the German First and Second Armies, which as late as the night 12th-13th September was at least 25 miles wide, and was not finally closed until 15th September. For instance, on 12th September, General Franchet d'Espèrey " most unfortunately considered the enemy in front of Foch was the more important, and moved North-East against him." On the 13th " the group of reserve divisions and Conneau's Cavalry Corps in the centre were opposite the 10-mile gap in the German line into which they penetrated without difficulty. But they did no more than this "—though one of the Cavalry Divisions spent the night well North of the Chemin des Dames. Nor does General Maunoury escape criticism for his actions during the advance. " Although General Joffre had on the 11th urged the Sixth Army, always keeping something on the left of the B.E.F., to send forces to the West bank of the Oise, in order to outflank the enemy, General Maunoury decided to send his whole army against the Germans in his immediate neighbourhood, who were retiring across the Aisne, and ordered only the Cavalry Corps to go West of the Oise." Consequently, the German right on the Aisne was not outflanked at the critical moment.

There is an interesting résumé of German strategy during the battle of the Aisne, giving details of Falkenhayn's initial plans on taking over the post of C.G.S. It was he who ordered a general attack on 26th September, which on the British front achieved nothing, except the distinction of being " the bloodiest battle-day of the whole of this period of the war."

The original edition contained no criticism of G.H.Q.'s conduct of the battle of the Aisne. Mature reflection has altered this :—

"The disappointing results of the operations on the 12th–14th September, after which a deadlock ensued, seem to have been due to a failure of the High Command to appreciate the situation, and exploit the still existing gap in the enemy's line. It was at any rate partly due to the neglect to exercise control, and issue orders which would have made the essential requirements of the situation clear to subordinate commanders.

"The forcing of the Aisne was likely to involve a race with hostile reinforcements, in which the Germans had the advantage, as they were falling back. . . . In the G.H.Q. orders there was no hint whatever of the importance of time.

By the evening of 13th September the situation had completely changed, yet the G.H.Q. orders merely repeated the formula that 'the Army will continue the pursuit . . . and act vigorously against the retreating enemy.' They gave no more tactical direction than to allot roads. There was no plan, no objective, no arrangements for co-operation, and the divisions blundered into battle."

THE CHACO WAR[1]

By G. H. N. Larden

FIGHTING in the Gran Chaco has been going on, intermittently, between Bolivia and Paraguay for nearly two years. An account of the operations may be of interest and value, if only as a reminder that there are still theatres of war where neither armoured vehicles nor aircraft can play any very important part, and where infantry and machine guns are still the predominant factors.

The disputed territory is situated towards the South East corner of Bolivia, and lies somewhat forlornly at the junction of Bolivia, Paraguay and the Argentine. Although it is thickly forested, mostly uninhabited, and practically waterless in the dry season, its acquisition has become more and more desirable to both the two first parties; the Argentine has remained neutral. In the case of Bolivia, possession of this territory seems to be linked with an old ambition to obtain a deep water port on the Rio Paraguay in order to obtain access to the Atlantic, and also to the Brazilian markets lying opposite. Looking into the future, she sees a transcontinental railway running from Santos on the Atlantic, to Arica or Mollendo on the Pacific, passing through the entire breadth of the Gran Chaco, and opening up the various fertile belts at its northern end.

It would be dangerous to lay the blame for war on one more than the other of the two countries. There is little doubt that it could have been avoided had either stopped to consider the great wastage of life and money which was bound to occur in conducting a campaign in such a desolate area. The Paraguayans no doubt felt confident of success, in that their soldiers were intimately acquainted with jungle life and warfare, and had on previous occasions proved their worth against more powerful neighbours. Moreover, the disputed area lay almost at their door, and they had but to cut a few roads and build a light railway to ensure the security of their communications to the projected front. The Bolivians, on the other hand, were in a position to acquire better armaments; they possessed a superior air force and more money; and their army had been trained according to German ideas. No doubt they underestimated the Paraguayan strength and believed that modern

[1] In this article the author gives his impressions of a visit to the Bolivian Army at the front.

weapons of war would obtain for them a superiority against which simple infantrymen would be ineffective, but they made one big miscalculation in the opening phases. They forgot that it was one thing to mobilize an army, and quite another to transport it to a battlefield a thousand miles away without any organization to maintain it when it got there. Unlike the Paraguayan lines of communication, those of the Bolivian forces are over a thousand miles long. In view of their unusual nature and their vital importance to the operations it may be of interest to trace their course.

La Paz, the capital, is really the main base of supply, both for food, manufactured articles, and imports. From there a metre gauge railway runs over the mountains to the Argentine frontier, five hundred miles away, where the military railhead is situated. The average height of this railway is 11,000 feet above sea level, and trains can only proceed slowly. From railhead it is a further five hundred miles to the front line, and the only means of traversing this distance is afforded by a single track, which winds it way over rocky plateaus, mountains, and wooded valleys. After dropping 9,000 feet this road then enters the huge forested belt of the Gran Chaco, through which it meanders along by the side of the Rio Pilconayo till it finally reaches the battle area. Throughout its length it passes through desolate country; provisionless and often waterless.

Small wonder then that the question of transportation and supply should prove a most embarrassing problem to the Bolivian General Staff, unused as it was to cope with difficulties of such a nature. On the outbreak of war the inevitable, of course, happened. Troops were hastily mobilized and packed off to railhead. From there they either marched or scraped a ride in lorries to the front, without any proper organization behind them for supplies, food or clothing. On arrival in the line they had to take on an enemy flushed with success, and superior in numbers, in a locality where water was almost unobtainable and food extremely scarce. Had it not been for the fact that the Argentine allowed food to be sold from her border, which lay next to the scene of operations, the Bolivian Army would probably have starved during the first few months. Little by little, however, arrangements were made for supplies to be sent up and depots to be formed. Medical stores were hastily imported and rushed up to the improvised huts erected as hospitals in the jungle. Lorries were bought in large quantities from America and made available for the transport of troops and water, and guns made the long trek behind mechanical transport. Some sort of organization was evolved for the provision of food, so that, when the Argentine closed her frontier to further supplies, the Bolivian Army was just able to stand on its own.

Such conditions did not permit of much energy being available for actual fighting, and the Paraguayans were quick to take advantage of this. Their superior knowledge of the bush, born of long sojourn in the jungle, usually enabled them to outmanœuvre the Bolivians. The latter, born and bred in the open mountains and trained on the high barren plateaus of the West, were quite unfamiliar with bush warfare, and most of the officers had never seen a forest in their lives. The sense of blindness they experienced at being shut in by the undergrowth was accentuated by the fact that maps were almost non-existent, and as the country is perfectly flat, they were unable to get any bearings of their true position. It is hardly surprising, therefore, that their morale should have been badly shaken in the opening days, and it is much to their credit that they made a determined stand at "Campo Jordan" against greatly superior numbers, which effectually stopped the Paraguayan advance for the ensuing twelve months.

Before proceeding further let us take a closer look at the type of country the armies are fighting in. Picture a thick carpet of undergrowth about eight feet high and so dense that a hatchet is necessary to cut one's way through it. Above this trees interlace their parched branches affording a measure of shelter from the sun, and protection from being seen by aircraft. For hundreds of miles the country is the same, only varied by occasional clearings where coarse grass and brambles grow. Water has to be obtained from wells, and even then it is only available at infrequent intervals, and in very small quantities, greenish in colour, and brackish to the taste. It has to be drawn up by hand in tins and emptied into drums. These are then put into the waiting lorries, and bumped up many miles to the lines and hospitals, breakdowns being frequent. Washing is, of course, prohibited, and even the wounded cannot be washed before being put to bed. Food of any sort is unobtainable locally, and has to be brought up a long distance from the rear. Luckily the needs of the Indians are simple: rice, dried meat, and frozen potato providing the staple diet, added to a little bread when available. Narrow paths connect up the various units of the line, while here and there a wider track leads to the trenches, enabling lorries to drive up to the line under cover of the undergrowth. Animals cannot subsist in the zone owing to lack of grass or water, and only insects seem to thrive.

Weapons.—The influence of the Great War is to be seen in many directions. The opposing armies no sooner met than they scurried to ground, digging themselves into trenches and dugouts. Machine guns were hurriedly mounted behind sand bags in trees, and trench mortars installed just behind the front line. Batteries of field guns were put into position further back, and endeavoured to bombard the enemy's

defences, usually without any success. The Bolivians even purchased some tanks; but these quickly broke down owing to ignorance concerning their maintenance, and were of no influence in the conduct of operations. Wireless, light automatic rifles, and flame throwers have also been employed, the Bolivians believing that the use of such modern implements of war would help to compensate them for the disadvantages they suffered in other directions. In a country so enclosed as the Chaco, however, many of these weapons have but little scope. Tanks are immobile, save in the clearings, and no facilities exist for their repair. Flame throwers are apt to fire the jungle on their users, and are treacherous devices in ignorant hands. Guns have to shoot blindly, no observation being possible; and as the only maps now available are air sketches, the percentage of hits hardly justifies the amount of ammunition expended. In point of fact, the infantryman and the machine gun have once again proved their domination of the field of battle, penetrating and consolidating where other arms have failed to pass. Wireless has, however, proved its value tenfold, affording as it does the only link between the armies and the seat of Government. Field telephones can only be laid to a very limited extent in the Chaco, as constant interruption is liable owing to breakages and fires.

Air Forces.—In endeavouring to find scope for their use, air forces have fared little better than tanks. Paraguay only possessed a few aeroplanes, and these were soon either shot down or compelled to retire to the workshops. Bolivia, on the other hand, possesses a compact little air force of modern machines with which she has carried out raids to the Rio Paraguay. Here, however, A.A. guns proved such a deterrent that the raids were discontinued, and the pilots concentrate on making maps of the hitherto uncharted area of the Chaco. These maps are indeed surprisingly good, and provide the only means of indicating to the army its whereabouts in the wilderness. The undergrowth is so thick that observation of troops from the air is very difficult and, with a little effort, total concealment is easily secured. Landing grounds are only found at Army H.Q. and Corps H.Q., and a forced landing would probably result in the pilot dying of thirst.

The oil wells from which Bolivia draws her supplies lie about four hundred miles behind the line, and a refinery plant is situated further forward. An outstanding feature on the Bolivian side has been the provision of three large ambulance aeroplanes, operating on one of the links between Army H.Q. and railhead. These ply over a distance of two hundred and fifty miles of the worst part of the Chaco, and often make two journeys daily each way. On the forward journey they convey bombs, explosives, and beer for the Commander-in-Chief; on the return journey they accommodate twenty wounded men.

The Fighting.—In the Chaco, fighting is like playing blind man's buff, You can hear your enemy but cannot see him. The two armies are stretched out opposite each other over an intermittent line nearly a hundred miles long, with unoccupied sections at irregular intervals. Where the forest is thick, their lines narrow down to a hundred yards apart. Where open spaces occur, each side occupies an edge, and eyes the other over the intervening space, awaiting an opportunity to attack. Here, no man's land is usually burnt, and swept by machine-gun fire. Wire entanglements are almost unknown, although sharpened stakes are sometimes employed in their place, as in Plantagenet days.

The best results have so far been obtained by surprise flank attacks; the attacker hacking his way round through the bush and debouching suddenly in force on his adversary's line of communication, so cutting him off from his supplies. This sounds easy of execution but, in fact, it is far from being so. With few maps and no landmarks, with every tree the same, and visibility limited to a few yards, it is ridiculously easy to lose direction even with a compass. It is seldom possible to cut a path in a straight line owing to knotted stumps or cactus bushes, and even after proceeding a few hundred yards one wonders where one started from. To cut a way through several miles of jungle and emerge at a particular point on a line of communication whose location is not exactly known requires a degree of jungle lore and information of the enemy which it is not usually possible to obtain. The Paraguayans, however, have occasionally succeeded in doing this, and their ability to find their way about the forest is phenomenal.

Elsewhere, desultory firing takes place daily along the front; trench mortars lob their missiles hopefully over to where the enemy trench is believed to lie, and machine guns sweep the areas from which suspicious sounds are heard. After a little practice, one gets quite good at locating noises; a Paraguayan on his stomach can be as stealthy as a tiger, and snapping twigs give the only indication of his whereabouts. The artillery are completely blinded, and observation is done mostly by ear, it being seldom possible to see the smoke of explosions. One battery commander told me he had not changed his position for seven months, and that during all that time no enemy shell had fallen nearer than 500 yards from his guns. It is, in fact, impossible to locate battery positions.

Since the present writer visited the scene of this fighting, a short armistice was declared towards the close of the past year, and an attempt was made to come to terms; but this failed and war broke out again with renewed vigour. On 11th December, two Bolivian infantry divisions, totalling some eight thousand men, were surrounded and captured near

Alihuatá. It is evident that the long strain and peculiar difficulties suffered by the Bolivian Army have at last begun to tell, and that the country generally is anxious to come to an agreement. If the balance of success has lain with the Paraguayans it can hardly be a matter for surprise. The wonder is indeed that the Bolivian Army has been able to fight so long, and so stubbornly, marooned far away from its bases in an inhospitable wilderness, and supported only by an uncertain, difficult, and improvised line of communication. The determination, endurance, and patriotism shown by her soldiers has been remarkable under the most exhausting conditions; especially so when one remembers that many do not understand the necessity for the sacrifices they are called upon to make. This is the first "modern" war their army has taken part in, and they have no reason to be dissatisfied with its achievements.

The chief lesson of the campaign is, perhaps, the importance of supply and maintenance. It is not often in modern history that an army has had to be maintained in a barren country at the end of a thousand mile line of communication, along which scarcely any supplies of any description are available. When it is realized that most of the route is merely a dirt track running through jungle, and that few of the lorry drivers had ever seen a car before, the real wonder is that the army got fed at all.

Another lesson, once again brought out by this war, is the danger of being caught unprepared. Bolivia had to improvise hurriedly everything in the way of maintenance, and hardly any transport was available at the outbreak of hostilities. Although she must have known that there would be trouble in the Chaco sooner or later, she did not seem to have made adequate preparations either for training her troops in bush warfare, or for organizing long lines of communication. The inevitable results were hardships and privations which might have been avoided.

A problem both countries will have to face is that of occupations for their soldiers on demobilization. Recruited from outlying parts and of primitive characters, they have tasted the power conferred by organization, and it is doubtful if they will, in future, be content with the lot which sufficed for them in the past. The solution seems to lie in the opening up of the country adjacent to the waterways, and of the fertile belt round Santa Cruz on the Bolivian side; for unless exports can be increased the financial stability of both countries must cause concern for many years to come.

CENTRAL AFRICAN RAILWAYS

By Lieutenant-Colonel H. E. Crocker, C.M.G., D.S.O.

EXISTING railways in East and Central Africa lie within two main zones separated by gaps of several hundred miles. The southern zone extends into Northern Rhodesia from the South, and includes the main line from the Cape and the Central Railway from Beira on the coast of Portuguese East Africa westwards through Southern Rhodesia to Bulawayo, where it joins the Cape–Congo Railway, which extends for some distance into the Belgian Congo. From Beira there is also a northern branch across the Zambesi, where a railway bridge is in course of construction, to Nyasaland. North of these lines there is a gap in Tanganyika which continues as far as the Central Railway that runs from the port of Dar-es-Salaam westwards to Kigoma on the shore of Lake Tanganyika. From this line there extend northern branches to Mwanza on the southern shore of Victoria Nyanza, and the recently opened line from Manyoni.

North of this Central Railway again there is another gap which stretches to the main Kenya–Uganda line from the port of Kilindini via Nairobi to Kampala in Uganda; there is also a branch to Kisumu on Victoria Nyanza.

While these railways provide communication from North to South as well as from East to West in the southern zone, and to a certain extent from East to West in the northern zone, they have not as yet been extended to bridge the gaps between the northern and southern zones. The result is that Uganda, Kenya and Tanganyika are separated from Rhodesia and the South by a wide belt of country untraversed by any railway.

Again, although Rhodesia can avail herself of four distinct outlets to the sea, only one of them lies wholly within the bounds of the British Empire. With this one exception they all traverse the territories of foreign Powers who are also in possession of the ports at their termini. These routes are as follows:—

(1) Southwards to the Cape, passing through the Union of South Africa. This is the only line and port within the Empire;
(2) Eastwards to Beira through Portuguese East Africa;
(3) Westwards through Belgian and Portuguese territory to the port of Lobito Bay by the recently opened Benguela Railway;
(4) North-West to Leopoldville through the Belgian Congo.

In the case of the northern zone the only port connected with the main lines of railway are Dar-es-Salaam in Tanganyika, and Kilindini on the island of Mombasa in Kenya Colony.

As a consequence of this lack of North to South railway communication within East Africa, the only method open to military transportation between the two zones would be by sea through the ports of Kenya, Tanganyika, and the Union of South Africa. The only alternative would be to utilize roads only passable in dry weather. If movements of troops were required to deal with native risings only, it is possible that Belgian and Portuguese ports might be made available under conditions which cannot be stated beforehand. If, however, the Empire were concerned in a European war, these ports might possibly be closed against the British through enemy action, and British troops would therefore have to make a long sea journey round the coast, or else proceed by march route. But in view of the close friendship which has always existed between Great Britain and the two countries named above, it may be assumed as unlikely that obstacles would be placed in the way of British utilization of their ports.

New Construction

As is often the case, commercial needs demand improved communications, and nowhere is this more apparent than in East and Central Africa, where the expansion of commercial undertakings emphasize the importance of rapid and convenient transportation, which can only be provided by railway development. With this end in view, the construction of several railways to supplement and amplify existing lines is contemplated in the near future. Routes have already been surveyed but, with one exception, actual work on the lines has not yet begun.

These new lines may be grouped into three systems, viz. :—

(1) Central Africa :—A line from the existing Cape–Congo main line just South of Bulawayo, to the West coast of Africa in Walvis Bay.

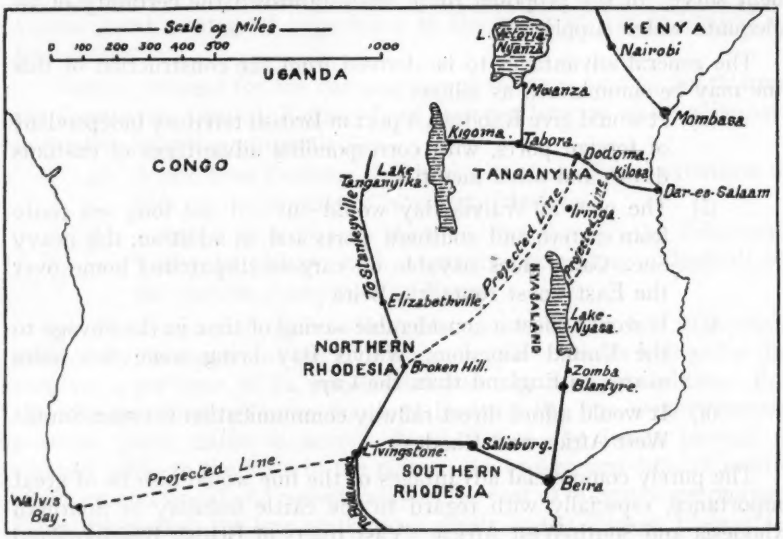
(2) Tanganyika :—Branch lines southwards from the main line to the borders of Nyasaland with an extension to the frontier of Rhodesia to meet a line from Broken Hill on the Cape–Congo line.

(3) Nyasaland :—The extension of the Beira–Nyasaland Railway from Blantyre to the southern shore of Lake Nyasa. Work on this line has been commenced and has made considerable progress.

A study of the map demonstrates the strategic importance of these lines apart from their commercial value. In the first place, they would

place Rhodesia in possession of a port on both the East and West coasts within British territory and, therefore, independent of foreign control. Considering the matter from a strategic standpoint, this would mean that troops could be dispatched to any point in Eastern or Southern British African territories by means of " all-red " railway transport, and without the delay and inconvenience necessitated by a sea voyage of however short a duration.

Apart from local campaigns, it might be found desirable to land an expeditionary force on one coast and to transport it by rail to a theatre of operations on the opposite coast without a sea voyage. To look yet further afield, the eastern ports of Africa, served by our trans-African



railways, might in an emergency conceivably act as a line of communication to India and the East, should the defile of the Suez Canal be denied to our shipping.

Before considering the proposed railway construction in detail, it must be understood that the lines are primarily intended for commercial usage, so that their capacity and use for strategic purposes, though of importance, is wholly a secondary reason for their construction.

Rhodesia–Walvis Bay Railway.

The building of this line has received considerable support and attention in high quarters. In his speech in Parliament, Mr. Moffat, Premier of Southern Rhodesia, stated that a definite step had been made

towards its construction. The line, according to *The Times* of 12th March, 1932, would run from a point between Matetsi and Dett on the trunk line in Southern Rhodesia, a little way South of the Victoria Falls, across the Kalahari Desert, over the Botletle River, and by way of Rakops and Sandfontein to Gobabis, where it would link up with the South-Western African Railway system to connect with Walvis Bay. It is considered that the ground is easy for railway construction over the greater part of the distance, while the absence of heavy gradients would make it economical enough to compete with the existing routes via Beira and Lobito Bay even for traffic from Northern Rhodesia and the Katanga district of the Belgian Congo. The result of the Government survey of the proposed route has established the certainty of an adequate water supply.

The general advantages to be derived from the construction of this line may be summarized as follows :—

(*a*) It would give Rhodesia a port in British territory independent of foreign ports, with corresponding advantages of customs duties and other facilities ;

(*b*) The port in Walvis Bay would cut out the long sea route from eastern and southern ports and, in addition, the heavy Suez Canal dues payable on cargoes dispatched home over the East Coast route via Beira ;

(*c*) It would effect a considerable saving of time in the voyage to the United Kingdom, Walvis Bay being some 600 miles nearer to England than the Cape ;

(*d*) It would afford direct railway communication between South-West Africa and Rhodesia.

The purely commercial advantages of the line would also be of great importance, especially with regard to the cattle industry of Southern Rhodesia and South-West Africa. Vast tracts of British Bechuanaland might be opened up for cattle-ranching ; while Walvis Bay is considered to be well adapted for the export of chilled meat. Chilled beef has already been exported from South-West Africa to the Cape, and the regular export of this commodity to Europe from Walvis Bay is regarded as a certainty in the near future, a great step towards satisfying home requirements of chilled meat from purely Empire sources.

At this juncture it is important to remember that South-West Africa, a former German Colony, has been placed under the mandate of the Union of South Africa, and for all practical purposes forms an integral part of the Union. In addition, the mandated territory of Tanganyika, also a former German Colony, is affected by identical considerations as to its status in time of war. Consequently the question as to whether,

in the event of war, a nation may send armed forces across a mandated territory must naturally arise. British action in this respect naturally must be in strict conformity with the laws that govern these problems. On the other hand, there may be some doubt as to whether these laws might be strictly observed by other Powers who might find it expedient to disregard them. The invasion of Belgium during the Great War strikes a note of warning as to what may be expected in the interests of strategical expediency.

TANGANYIKA.

Railway development in Tanganyika has been designed on a commercial basis no less than in Rhodesia, but the proposed lines might assume great strategical importance in the event of war in Central or East Africa.

Various schemes for the construction of railways leading South from the Tanganyika Central Railway have been put forward which culminate in the two following proposals :—

(*a*) A line from Dodoma to Iringa with an eventual extension to Fife on the frontier of Northern Rhodesia ;

(*b*) A line from Kilosa on the main line through the Kilombero Valley to Ifakara with a possible extension to Mufindi on the eastern shore of Lake Nyasa.

(*a*) *The Iringa–Fife Line.*—The construction of this line is strongly affected by the nature of the country to be traversed, as well as by the relative importance of its commercial and strategic possibilities. For the first two hundred miles South of Dodoma the line would traverse a sterile plain, liable to serious floods, before the Iringa plateau is reached, while to the West of the plateau the broken and difficult nature of the ground would add considerably to the cost of railway construction. From the plateau the line would drop gently to the Usangu Plain until it reached Ilongo. From Ilongo to Fife on the Rhodesian frontier the line would pass through most difficult country, consisting largely of steep escarpments, which would enhance the cost of construction considerably. Within the Rhodesian frontier no serious difficulty of construction is anticipated. The line from Broken Hill to Fife would in all probability follow the Abercorn road for some distance and then branch off in an easterly direction.

This line would serve the white settlements at Iringa, but until they were reached it would cross a barren plain which would bring in no revenue. The commercial importance of this line cannot compare with the eastern line, but, on the other hand, it is the only line that could afford assistance to the white settlements.

The completion of the Broken Hill–Fife–Tanganyika Railway would place Rhodesia in direct communication by rail with the East African ports by purely British route, and would moreover complete inter-railway communication within the East African Dependencies. Owing, however, to the expense of construction and its lesser commercial importance, it is improbable that the western line will be constructed as yet, though its eventual construction may be regarded as possible.

(*b*) *The Kilosa–Ifakara Line.*—This would serve the fertile Kilombero Valley with its extensive native plantations. The country is easy, and would offer but little difficulty to railway construction. The existence of a line to Lake Nyasa, together with the extension of the Nyasaland Railway northwards from Blantyre to the southern shore of the Lake, would provide an inter-coastal railway with a ferry across the Lake placing Nyasaland in direct railway communication with the ports of Beira and Dar-es-Salaam.

Conclusion

With the completion of the proposed railways, in addition to those already in existence, the inter-communications of East and Central Africa will assume a commercial importance which may have far-reaching effects in the preservation and development of our African Empire. Distances will be eliminated and time greatly shortened. From the strategic point of view, this means that combatant forces could be transported from point to point with the greatest rapidity: a fact which in itself will have a marked effect on the conduct of any operations which may be deemed necessary, either in dealing with local risings, or in the more serious aspect of war on a large scale. The advantages of the enhanced facilities for maintaining such forces in the field are obvious.

THE INTERNATIONAL SITUATION

FRANCE AND GERMANY

SINCE Germany's withdrawal from the League of Nations and the Disarmament Conference, a number of notes and conversations have been interchanged with her immediate neighbour. Ostensibly, these have aimed at more explicit statements of what each country wants, with the object of ending the present *impasse*; but it is easy to sense that, behind a certain superficial frankness, there is, on the one hand, the German determination to drive home her recent diplomatic victories, and, on the other, the French desire to remain entrenched behind the League of Nations and the Versailles Treaty and not to be beguiled into direct and unsupported bargaining with her late enemy.

In an interview, published in *Le Matin* in November last, Hitler stated categorically that Germany had given up all claims to Alsace-Lorraine; he repudiated all ideas of war which, he said, "would only make things worse . . . mark the end of our races . . . and, in time, Asia and Bolshevism would rule Europe." Provided Germany were given equality of rights, he had no objection to the security of France being reinforced by an alliance with England. He claimed that, in leaving Geneva, he had done the right thing and helped to clear up the situation. "The League of Nations," he said, "is an international parliament in which the conflicting groups of Powers can only quarrel. The differences, instead of being settled, only grow worse." Germany would not return to Geneva. He was quite ready, however, to enter into negotiations with any State.

A few days later the Chancellor had a long talk with the French Ambassador in Berlin. He, at once, raised the question of the retrocession of the Saar, which ever since, he has consistently urged, should not await the plebiscite of 1935. As regards disarmament, he insisted that Germany's demands shall be satisfied, "both qualitatively and quantitatively." These demands were formulated in greater detail in a communication from the German Chancellor to the French Ambassador on 11th December. It is understood that the principal points were:—

(1) The *Reichswehr*, i.e., the actual regular army of 100,000 men now authorized by the Treaty of Versailles, to be replaced by a short-service army of 300,000 men; this force to be

subjected to not more than nine to twelve months' training per annum;

(2) The new army to be equipped with the appropriate proportion of such weapons as tanks, heavy field guns, and military aeroplanes, which other Powers may retain, but which are prohibited to Germany under the Treaty;

(3) Negotiations to be opened with France for the immediate retrocession of the Saar.

This document was discussed by the French Government, and, later in the month, the Ambassador, acting on instructions from the Minister for Foreign Affairs, informed Herr Hitler:—

(*a*) That France and Germany alone cannot arrange questions which are dealt with in the Treaty of Versailles;

(*b*) That, equally, they cannot settle matters relating to disarmament, for which an international conference has been convened, in accordance with the provisions of that Treaty.

On 19th December, the German Government presented a further note to the French Government, reiterating their demands for the increase of the *Reichswehr* and direct negotiations for the retrocession of the Saar, but agreeing to submit semi-military as well as military organizations to international supervision and control, provided other Powers did the same, and offering to sign a non-aggression pact between the two countries of ten years' duration.

In reply, the French Council of Ministers sent an *aide-mémoire* to the German Government which, with one exception, was practically a reversion to the proposals made at Geneva immediately prior to Germany's withdrawal. France still maintains that "equality" must be attained by "general European disarmament on land and in the air to the German level, not by the upward revision of German armaments."[1] She also adheres to her "two periods." It will be recalled that it was the suggestion that these might involve a delay of, perhaps, eight years before Germany would attain "equality" that proved the last straw and caused her to leave the League. The new French offer modified this time limit to the extent that the first period should be governed by the time taken by Germany to convert her *Reichswehr* into a short-service army of 200,000; her claim for 300,000 is unacceptable. During this period, France would undertake to make no increase in her armaments, and *pari passu* with the German conversion, she would make similar changes in her own army. It is proposed that the Commission of Investigation shall be set up at once, and Germany would be expected

[1] *The Times*, 11th January, 1934.

to make specific reductions in her semi-military—S.S. and S.A.—formations.

It is reported that France would be willing to reduce her military aeroplanes by 50 per cent., provided other nations did the same. This French proposal would not, it is believed, apply to Britain, who it is recognized has very materially disarmed in the air.

With the satisfactory completion of the first period, the French undertaking to disarm by stages to the German level would become effective. If, during this period, it is decided to maintain such weapons as light tanks, Germany would also have the right to possess them.

These proposals undoubtedly represent the greatest advance on the part of France towards meeting Germany's claims that she has yet made; but Germany continues to persist in her demand for "immediate and practical equality," and, if other nations will not divest themselves of those weapons which are prohibited to her, she fully intends to provide herself with them.

As the Berlin correspondent of *The Times*[1] puts it, "the choice is no longer between disarmament and re-armament, but between open re-armament—substantial but possibly controlled—and secret re-armament." And the crux of the whole trouble, as it has been summarized by Mr. Anthony Eden, is "the French demand for security [and] the German demand for equality."

BRITISH DISARMAMENT POLICY

REVISED proposals for a measure of disarmament were published in a White Paper on 31st January.

The most notable feature in them is the specific acceptance by the British Government of the principle that "arms of a kind permitted to one State cannot continue indefinitely to be denied to another." This is an initial bid to entice Germany back into the fold of a Geneva Conference. But the proposals go further in their endeavour to meet her claims. They recall that the original British Draft Convention[2] suggested armies of 200,000 men with eight months' service for each of France, Germany, and Italy; but, noting Germany's express desire for 300,000 and twelve months' service, they seek a figure somewhere between the two as regards strength, and acquiesce in the longer period of training if this would produce the all-important state of parity.

Tanks.—It is proposed that all tanks of over 30 tons should be destroyed within the first year; all over 20 tons by the end of the third year; and all over 16 tons by the end of the fifth year.

[1] *The Times* of 22nd January, 1934.

[2] See the JOURNAL for May, 1933, p. 398.

Germany would be allowed the 6-ton tanks which she maintains are essential to her short-term army.

Mobile Land Guns.—The British Government is prepared to concur in the German army being equipped with 155 mm. guns. It is proposed that all mobile guns over 350 mm. shall be destroyed by the end of the first year; those over 220 mm. by the end of the fourth year; and those over 155 mm. by the end of the seventh year.

Air Armaments.—If a Permanent Disarmament Commission has not produced an agreement for the abolition of all military aircraft within two years, all countries would be entitled to possess them. Countries would increase or reduce their air armaments by stages to an agreed figure in the course of eight years; Germany to acquire parity in these armaments by similar stages.

Naval Armaments.—The British Government stand by their original Draft Convention, but are prepared to make proposals for a simpler arrangement, if thought necessary, in view of the near approach of the 1935 Naval Conference.

Supervision.—If agreement is reached on all other issues, Britain will accept a system of " permanent automatic supervision " of armaments.

Security is to be provided in practical form by immediate consultation between the Powers should the Disarmament Commission report a failure by one of the parties loyally to execute the Convention, and views would be exchanged as to the steps to be taken to restore the situation.

It is proposed that the agreement should last for ten years.

An essential condition of the agreement is that Germany should return to Geneva and the League of Nations.

THE INTERNATIONALIZATION OF AIRCRAFT

THE following are extracts and a summary of a speech made by Lord Londonderry in reply to Lord Allen of Hurtwood's question in the House of Lords, on 7th November, 1933 :—

The Noble Lord's question appears to me to embody two very diverse policies. In the first place, I presume, he desires to put forward the abolition of military aviation, coupled with the internationalization of civil aviation. In the second place, he would urge the concentration of military aviation in the hands of the League of Nations, and, again, with this, I presume, he would couple the internationalization of civil aviation.

As to the first of these two policies, the Government adhere to the policy with regard to air armaments which we have put forward at Geneva, namely, that of parity for the Great Powers who at present possess air armaments, combined with their reduction from their present strength, both in quantity and quality, pending the examination of the difficult and complicated question of the internationalization of civil aviation with a view to the abolition of air armaments of every kind if a really practicable solution of that problem can be reached. I am sure the Noble Lord will not expect me to say anything this afternoon which would be calculated to prejudice the examination of the question of the internationalization of civil aviation in view of the fact that we have offered to join in an international enquiry into this matter at Geneva.

Let me merely state the problem; you will at once see that it is . . . one of infinite complications.

Civil aircraft fall into two classes. We have the regular transport or commercial aircraft, which are mostly of the larger type of machine, and we have the privately owned and miscellaneous aircraft which are mostly of the smaller type of machine. The number of these latter aircraft very considerably exceeds that of the first class, and any scheme for internationalizing civil aviation would not be effective if it did not include both classes. For, to take the example of this country alone, less than one-twentieth of our aircraft would be affected by any scheme of internationalization which was confined to aircraft engaged on regular air transport.

On the question of the internationalization of air transport lines alone, let me remind the Noble Lord that the view is strongly held by such countries as Germany that any scheme of internationalization must be world-wide and complete, especially in view of the fact that commercial aviation, though still comparatively in its infancy, already covers the globe.

So far no satisfactory or effective scheme for the internationalization of civil aviation has been put forward. Far-reaching proposals for the control or internationalization of transport aircraft have been discussed at Geneva, but no agreement has been reached upon them; and a number of countries, including the United States and Japan, have emphatically stated that they cannot be parties to any scheme of internationalization.

No one has yet suggested how, in the event of war, States would be prevented from seizing and employing for their own purposes such internationalized aircraft as were within their borders. Let me repeat

what I said at Geneva in February (1933) when I had the honour of representing His Majesty's Government there :—

"Any scheme for the internationalization of civil aviation must satisfy at least the following conditions. In the first place it must be so framed as effectively to prevent all possibility of the resources of civil aviation being used for military purposes in the event of an outbreak of hostilities. In the second place it must not prevent or hamper the fullest development of aviation in every country for civil and commercial purposes, nor must it restrict freedom in the realm of experiment and research."

The proposed Permanent Disarmament Commission would be composed of a representative of each nation and, if a disarmament convention is reached, would be set up immediately. Hence the provision that the Permanent Disarmament Commission should immediately devote itself to this subject upon which, indeed, the possibility of the complete abolition of military and naval aircraft depends. For example, suggestions have been made for the formation of an international company. Even if this were possible, could it be world-wide? Would it include the civil aviation of America? Or of Japan? Would it be limited to air liners, and how would control of other civilian machines be secured? Moreover, it is not sufficient to provide for the transfer of property to the international company. Pilots and mechanics must remain citizens of their respective nations, and internationalization will not alter the fact that they, together with their machines, will be in particular territories at particular times and liable to requisition by a State which requires them. There are, therefore, great practical difficulties to be surmounted, and His Majesty's Government are satisfied that the proposal of the Convention would be the most practical way to proceed.

AN INTERNATIONAL POLICE FORCE.

I will now pass to . . . the question of the internationalization of air armaments. The proposition of the Noble Lord stated in the simplest terms is the erection of a super-State at Geneva. This conception of the League of Nations is not one which the Government can easily contemplate. In the first place, for us, and I believe for the large majority of the people of this and other nations, the League exists for the pacific settlement of international disputes and not for the abolition of war by means of war. For us the League of Nations is not a new Federation or Confederation of States for the purpose of imposing its will upon any single nation or group of nations, by the exercise of physical force. Our main conception of the League of Nations is that of a Council Chamber to which all nations shall resort for common deliberation whenever international difficulties arise. . . . .

The essence of the League of Nations is enshrined in its pacific character. It was conceived and embodied for the sole purpose of the avoidance and ultimate abolition of war. The policy advocated by the Noble Lord, if it should secure adoption, would involve an entire change, a veritable revolution in the whole character of the League. It would be followed by this inevitable consequence that any future war would be a world war and that even the smallest fire would involve universal conflagration.

If war is evil, a fact upon which we are all agreed, the endowment of the League with physical force, whether we call it a police force, or, admitting its real character, designate it a military force, would be to change its basis from that of its original character as an influence of moral suasion to that of military domination, which we all deplore. Moreover, if we are to arm the League of Nations we cannot stop short at a fleet of aeroplanes. We must arm it with the full panoply of military equipment, and that of such character and magnitude that must command and ensure success, if that be at all possible. Wars are not waged, and certainly are not won, by the exercise of a single arm. They require the co-ordinated and effective use of power over all three elements, sea, land, and air.

Let me examine for a moment just a few very elementary difficulties which this idea of the super-State brings into existence. First, what is to be the element of control in this new super-State? There must be a General Staff. Plans must be devised which contemplate war upon every nation. Who is to make these plans? And, if made, how are their secrets to be preserved? Then again, where is the international force to be quartered? Where is it to be exercised? Is it simply to consist of contingents to be furnished by the several States summoned at the bidding of a General Staff in eternal session at Geneva? Once more, in what language are the orders to be conveyed? What steps are to be taken to secure uniformity of armament, of equipment, of discipline? Where are to be its magazines, its arsenals, its aerodromes? Finally, would you venture to stake your fortunes and the safety of the world, for that is what it would come to, upon the victory of a heterogeneous force of this character, summoned from the ends of the world against the concentrated forces of a single first-class Power, fired as they would be with a national purpose and backed with that energy and unity of endeavour which patriotism alone can supply.

What would happen if an aggressor State, laying forcible hands upon civil aircraft in its territory at the chosen moment, whether internationally or nationally owned, struck an overwhelming blow at Geneva, the citadel of the League, or if that same citadel were invaded by the armed land forces of the common enemy?

I venture to think that the League of Nations cannot be allowed actively to engage in hostilities because, for one thing, quite apart from any question of the morality of it, we cannot, and dare not, risk its defeat.

Finally, we must remember that, at any rate for the present, there are certain powerful nations which do not belong to the League, and it is quite obvious that the erection of a super-State, such as the Noble Lord envisages, would require the adherence of every considerable nation.

In short, we do not think that the establishment of an internationalized air force at the disposal of the League of Nations is either a practical or a desirable policy, and we are convinced that its adoption would by no means necessarily be followed by the happy results which the Noble Lord anticipates.

(*See also "British Air Policy" in* GENERAL SERVICE NOTES, *p.* 167).

GERMANY AND POLAND

ON 15th November an agreement was reached in Berlin between Herr Hitler and M. Lipski, the new Polish Minister.

According to an official report of the meeting, "the conversation established full agreement, and both governments will take up direct negotiations on all German–Polish problems, in order to consolidate peace in Europe. They renounce the use of force in adjusting their mutual relations."

RECOGNITION OF THE SOVIET UNION BY THE UNITED STATES

AFTER an interval of sixteen years the Soviet Union has at length been formally recognized by the United States. M. Litvinov, the Soviet Commissar for Foreign Affairs, visited Washington on 16th November, 1933, and an agreement was drawn up between the two Powers; it dealt with the following points:—

(1) Each country will mutually refrain from interference in the internal affairs of the other;

(2) The citizens of the one country resident in the other country shall be permitted freedom of worship and liberty to exercise ecclesiastical functions;

(3) A protocol providing for negotiations for a consular convention, giving Americans in Russia the civil rights enjoyed by other aliens;

(4) A memorandum to be given by the Soviet Commissar defining the scope of prosecutions for economic espionage;
(5) Agreement by the Soviet Union, pending the settlement of claims and counter-claims, not to make claims respecting court judgments or official actions affecting the Russian Government's obligations;
(6) A statement by the Soviet Commissar that his Government will not hold the United States responsible for property damages due to the presence of United States troops in Siberia in 1918;
(7) A joint statement by the United States' President and the Soviet Commissar expressing hopes for a speedy solution of all outstanding questions of indebtedness and claims.

This statement was published in the United States Press on 18th November; it was accompanied by the appointment of Mr. W. C. Bullitt to be United States Ambassador at Moscow.

The agreement gave great satisfaction in the United States press, being greeted as a probable opportunity for the speedy expansion of American trade with Russia. But the political significance of the agreement is possibly far greater, since it cannot fail to exercise some influence on the position in Manchukuo, where for some time past the situation between Japan and the Soviet Union has been strained.

MANCHUKUO

THE negotiations which have been proceeding in Tokyo since the end of June, 1933, concerning the sale by the Soviet Union to Japan of the Chinese Eastern Railway have come to a state of stalemate. The price first demanded from Manchukuo for the railway by the Soviets was originally 250,000,000 gold roubles; this was subsequently reduced to 200,000,000 gold roubles. The Manchukuo representatives have not yet been able to raise their figure above their suggested price of 50,000,000 Japanese yen; this amount, at the current rate of exchange, would be about one-tenth of that demanded by the Soviet.

Since his return from Washington M. Litvinov has made a public speech in Moscow, in which he declared that the Soviet Union was ready to fight rather than accept an unfair price for the C.E. Railway. He demanded that Japan must:—

(1) Cease violent police activities on the C.E. Railway;
(2) Restore those Soviet rights on the Railway which have been violated;[1]

[1] This refers mainly to the supersession of Russian railway personnel.

(3) Resume negotiations for a fair commercial price;
(4) Japan to be required to sign a pact of non-aggression with the Soviet Union.

M. Litvinov also expressed the opinion that the Japanese harboured designs on the entire Russian Far East; these intentions were being shown by the concentration of troops and the construction of light railways towards the Soviet frontiers. He classed the Japanese with the German Nazis, and warned the Nazi Government that the Soviet Union would fight if any attempt were made to realize Herr Hitler's and Herr Rosenberg's dreams of colonising the Ukraine or other Soviet territory.

M. Litvinov, in the same speech, emphasized the improvement of Russian relations with Poland; he also referred to the good relations developing far and fast with France. He pointed to the resumption of relations with the United States as the most important Soviet event of recent times—an event, he said, which marked " the capture of the last enemy fort."

M. Hirota, the Premier of Japan, speaking at Tokyo, has since made an important pronouncement on Japanese foreign affairs. He deplored the change that had recently come over the Soviet Union's attitude towards Japan. He categorically denied that Japan had undertaken any troop movements, or had made any arrangements that could be construed as threatening the Soviet Union. He stated that Japan only desired the peaceful development of Manchukuo.

This statement has been accompanied by the temporary disappearance, on grounds of ill-health, of the very imperialistically minded Minister for War, General Araki; the General, however, has been replaced by a substitute after his own heart, and will return to office later.

CORRESPONDENCE

[*Correspondence is invited on subjects which have been dealt with in the* JOURNAL, *or which are of general interest to the Services. Correspondents are requested to put their views as concisely as possible, but publication of letters will be dependent on the space available in each number of the* JOURNAL.—EDITOR].

UNIFORMS OF THE BRITISH ARMY.

TO THE EDITOR OF THE R.U.S.I. JOURNAL.

SIR,—In the lecture on the above subject published in the November issue of the JOURNAL, the lecturer has duly acknowledged the great assistance he received from two such well-known students of the subject as Messrs. P. W. Reynolds and G. Brennan. He has, however, underrated the quality and amount of matter, in general, relating to British military dress which appeared in pre-1914 days, as compared with that which has appeared since 1918. It is questionable whether public interest in the Army, and Army uniforms of the past, is greater than in pre-war days.

The Lecturer, perhaps wisely, avoided entering into many details of the history and evolution of Highland military dress in the British Army, but in what he has, namely in his reference to the evolution of the Highland military bonnet, as well as to the early history of the Black Watch, there are certainly discrepancies.

The senior Highland regiment originated as independent companies acting as military police (not merely to "patrol"), and in the year 1725 (*not* 1729) these companies were properly disciplined and clothed, and, so far as known, wore red jackets (not "doublets") from their inception, certainly from 1731 until regimented in 1739.

After the Rising of 1745 (which was by no means general throughout the Highlands) and from the year 1748, only one Highland corps was in existence until 1757, when two more were raised, followed by several others between 1759 and 1761. All these were disbanded at the peace of 1763 except the Black Watch. Further Highland regiments were formed in 1775-8 for service in North America and India, some of which still exist.

The Lecturer's remarks on the origin of the feather (or more correctly feathered) bonnet, are divergent from actual fact. No doubt the two Highland corps which served in North America in 1757-63 made use of locally obtained feathers (brush-turkey's) for their bonnets, but not so the several raised for service in Europe. These latter employed ostrich feathers, or a piece of bearskin. A bonnet of this period, in the new Scottish Naval and Military Museum, Edinburgh Castle, is mounted with a tuft of ostrich feathers. The feathers did not, as the lecturer stated, "cover the whole top of the bonnet" by the "American War period," but curled over it showing the whole of the top of the bonnet. It was not until about 1790 to 1800 that the ostrich feathers wholly covered the bonnet, and began to droop over the right side, in the form of "fox-tails." Ostrich feathers were commonly known and employed long anterior to 1795, the date assigned to them by

the lecturer, and, indeed, were the original and normal adornment for the military bonnet.

The bonnets of early Highland corps were not all diced, but in some regiments had a plain red rim. Originally worn flat, they were cocked, or set up, assuming a pork-pie appearance, from about 1770.

I. H. MACKAY SCOBIE, Major.
late Seaforth Highlanders, F.S.A.Scot.

18th November, 1933.

TO THE EDITOR OF THE R.U.S.I. JOURNAL.

SIR,—There were two errors in Major Stacke's lecture published in the November issue of the JOURNAL which might be corrected. The independent Companies of the Black Watch were raised in 1725 and not in 1729. Further, when the regular regiment was formed in 1739-40 they were not given red *doublets*. The doublet was not introduced until 1855. Until that date the Highland regiments wore the ordinary red coat or coatee of the line, though with the skirts or tails shortened.

On another point, the development of the bonnet, I should like to ask his authority for differing from Stewart of Garth, who joined the 42nd in 1787 and wrote his history in 1822. Stewart says that the men of the 42nd first supplied themselves with *ostrich* feathers after their return from America in 1768. Before that date only officers and N.C.O's had worn a small plume of feather, " after the fashion of their country " ; the men were only allowed a piece of black bearskin. The use of lofty feathers was animadverted on in an Inspection Report of 1790, after their second return from America, but the kind of feather worn is not mentioned. Stewart does not even mention turkey feathers. Again, Stewart describes the bonnet worn at the time of the West Indian Expedition in 1795 (because he objected to its replacement by a felt hat) as " being of thick woollen cloth stuffed with materials of the same substance and covered with feathers, etc." The cloth above the diced band did not " fade away " until after the Napoleonic Wars, when the " crow's wing " was introduced ; the first bonnet really made was only a wire cage with a hole in the side.

R. F. H. WALLACE, Colonel.
late The Black Watch.

November, 1933.

Major Stacke makes the following replies to the above letters :—

I am grateful for the correction of the date " 1729 "—an unfortunate misprint ; the correct date is 1725. Actually the first Highland units in the British Army were some companies raised in 1710. These, however, were disbanded seven years later, and had no direct connection with the six companies raised in the spring of 1725, which fourteen years later were amalgamated to form the existing regiment. For the rest, Highland dress is a specialized subject, and it is with great diffidence that I venture to cross swords with Colonel Wallace and Major Mackay Scobie on their own ground, but :—

(*a*) As regard the original costume of the Independent Companies of Highlanders, Cannon (" Historical Records of the 42nd Foot ") states that :—". . . The men continued to wear the dress of the country, which consisted so much of black, blue and green tartan that they presented a very sombre appearance, which procured them the appellation of " Freicudan Dhu " or " Black Watch," in contradistinction to the regular troops, who wore scarlet coats . . . and were called " Seideran Dearag " or " Red Soldiers."

Also Archibald Forbes ("The Black Watch, the Record of an Historic Regiment"):—"The 'Black Watch,' or, as is its Gaelic name, 'Am Freiceadan Dubh,' was the appellation given to the Highland companies . . . From the time that the Highlanders were first embodied until they were regimented the Highlanders continued to wear the dress of their country. Each company wore the clan tartan of its commanding officer, the colours mingling in which being mostly black, blue and green . . . the result afforded the dark and sombre hue whence came the name . . . (from) . . . the contrast with the conspicuous uniform of the regulars."

Fortescue, Vol II, p. 49, states:—"The new companies wore their national dress, which, as it consisted principally of black, blue and green tartan, presented a sombre appearance, and gained for its wearers the name of the Black Watch."

Research in the original documents at the Record Office has produced negative results, in that the Warrants, Orders, &c., relating to these Highland Companies from April-May, 1725 until 1729, although giving in full detail the arms and accoutrements issued to the companies, make no mention of uniform.

Cannon, Archibald Forbes, and Fortescue may, of course, have been wrong; but, if so, there is no good explanation of the term "Black Watch"; since after the adoption of the red coat the appearance of the unit (*vide* the Official Plate of 1742) was little if at all more sombre than that then presented by the Lowland "Royal" Regiments.

(*b*) As to the form of that original uniform, referred to by Colonel Wallace. the term "doublet" was used loosely to describe the short red jacket shown in the Plate of 1742—a jacket which, as will be seen from that plate, was actually shorter than the waistcoat worn beneath it and, being single-breasted, was entirely different from the long-skirted double-breasted coats worn by the other Foot regiments. This jacket was definitely a "doublet" in the XVIIth century sense of that term; and the term was used in that sense, not in the special sense to which it has been restricted since 1855.

(*c*) As to the development of the feather (or feathered) bonnet, a portrait dated 1784 in M'Innes' "Brave Sons of Skye" shows the feathers covering the whole top of the bonnet, and in another portrait, dated 1789, stated to be at Eglinton Castle, the feathers are drooping down the right side. Both these portraits are reproduced in Gardyne's "History of the Gordon Highlanders."

(*d*) Lastly, as to the introduction of ostrich feathers. It is true that Colonel (afterwards Major-General) David Stewart stated that ostrich feathers were adopted by all ranks after the Seven Years War; but the accuracy of his statements as regards events before his own personal knowledge is questionable. His "Sketches of the Highlanders of Scotland," in which that statement is made, was published in 1822; and in the following year (1823) a printed pamphlet was published in Edinburgh (Bell & Bradfute of Edinburgh; Longmans of London—(No. T.1099 (14) in British Museum Catalogue) pointing out numerous

inaccuracies and misstatements in his work. The author of that pamphlet says that in regard to the " transactions of which he (Colonel Stewart) was an eyewitness . . . his reminiscences are very interesting. The facts depending on oral or local information are more liable to error . . . and I observe several things which I consider inaccurate . . . Some of his notes and digressions are very entertaining; but, from the quantity of old tradition of doubtful authenticity which has crept into them, some readers may be disposed to think that . . . he has no objection to blend truth and fiction together . . . From his general character I am persuaded he would not state anything which he did not believe to be true. At the same time it is to be regretted that he did not scrutinize more diligently some of the traditions communicated to him before he recorded them in a work of so much merit and ability . . "; and then proceeds to point out inexactitudes through 63 pages of close print. It is true that this question of the ostrich feathers is not one of those singled out for correction by the author of the pamphlet; and it may be that his condemnation of the distinguished soldier's accuracy is altogether too sweeping; but in face of it Colonel Stewart's statement can hardly be accepted without some confirming authority; and so far I have failed to find any confirmation. On the other hand, an account of the expedition to South Africa in 1795 in the " Gentlemen's Register " of 1818 refers to the pleasure of the Highlanders " in fitting their caps (*sic*) with feathers of the ostrich, finer than those used before "; and a description of Cape Town in 1807 appended to the diary of Thomas Blackwell, who served with Whitelocke's expedition, includes this passage: ". . . Many ostriches, with whose feathers our Highlanders are decking their bonnets," Neither quotation is conclusive, since neither precludes the possibility that ostrich feathers were used before, but together they indicate a possible explanation of the ostrich feather decoration. If regarded as a result of, and a trophy of, that South African experience, the general adoption of ostrich feathers is natural enough; and this explanation is surely more likely than that of spontaneous adoption in the middle of the XVIIIth century. Officers then may have afforded themselves any extravagance (the specimen in the Scottish National Museum is presumably an officers' bonnet), but it seems hardly credible that the poorly paid rank and file should have made ostrich feathers the " normal adornment " (to quote Major Mackay Scobie) of their headdress at a period when ostrich feathers must have been rare and expensive, and when no Scottish soldier had ever seen an ostrich.

In general, also, I must differ from Major Mackay Scobie as to the interest of the present day public in the history of our Army. The success of such excellent reconstructions of the past as D. L. Murray's novel " Trumpeter, Sound ! " or Forester's " Death to the French " is only one indication of an intelligent interest in our Army's history kindled by the recent military service of a very large proportion of our population. The completion of Sir John Fortescue's " History of the Army " has also stimulated interest, providing as it does a fitting background for the study of our past uniforms—a study which now, I hope, may be organized on a satisfactory basis.

To the Editor of the R.U.S.I. Journal.

Sir,—As Captain Steele has raised the question of the resumption of full dress uniforms, may I offer a suggestion on which it might be of interest to elicit opinions?

There seems to be no good reason why the soldier should always be dressed in his fighting kit, any more than the professional footballer always in shorts; but a real problem is to modernize full dress uniforms, which look to the rising generation too much like fancy dress.

My suggestion is that the troops should have a "peace uniform," which should be similar in shape to the war uniform. The jacket, for example, should be cut like the service jacket, but it should be scarlet, blue or rifle green, as the case might be, with blue, buff, green, yellow, white or scarlet facings. In most cases the peaked caps referred to by Captain Steele would be a suitable headdress.

H. E. Beal,
Captain.

MAN MAINTENANCE

To the Editor of the R.U.S.I. Journal.

Sir,—In his letter in the November Journal, Captain FitzGerald expresses the opinion that the real cause of any failure to maintain morale in the last decade is naval officers' lack of practical experience, due to post-War conditions in the Service, and that the remedy is more opportunity for exercising initiative and gaining such experience.

With this view one can hardly disagree, for an ounce of practice will always be worth a ton of theory, *provided that it is the right ounce*. Theoretical study of war is necessary because it cannot be practised in peace. If Service conditions are such that proper opportunities for officers to practise man maintenance are not available, I suggest that some theoretical study is necessary in its place. The born genius will achieve successful practice by himself; but surely the average officer needs some guidance to ensure that his practice runs on the right lines.

The causes of every mutiny in the armed forces can be traced to the neglect, by those in authority, of certain age-old rules of leadership. Surely it will be wise to ensure, as far as is possible, that those rules will not be forgotten again. To that end I suggested a morale committee, a handbook, and instruction for all officers.

G. M. Bennett,
Lieutenant, R.N.

8th December, 1933.

THE VALUE OF AIRCRAFT FOR THE PROTECTION OF SEA-BORNE TRADE

To the Editor of the R.U.S.I. Journal.

Sir,—In the Journal for August, 1933, under the above heading, there was a valuable lecture by Air Commodore Robertson, R.A.F. Since then there has appeared in the Press (see *The Times*, October 10th) an account of the trial of a big flying-boat, experimentally armed with a 1½ pounder gun—presumably of the "pom-pom" type. This new type of aircraft should potentially enhance the value of sea-borne aircraft, both as protection to convoys and vice-versa as blockade auxiliaries to surface vessels. It would be of considerable interest if the views of an R.A.F. officer could be published on the possibility of this advance in aircraft armament being likely to materialise.

It would appear that the bomb and torpedo are more likely to be used against ships of war only, and the new 1½ pounder and, or, machine-gun reserved for merchant vessels, though the latter of these two would almost drop out altogether of the picture and be replaced by the former entirely. The two types of armament are, however, equally suitable for purposes of offence and defence in conjunction with one another.

The supply of ammunition too, would have to be very considerable.

T. P. MILNE-HOME, Captain,
late The Highland Light Infantry.

December, 1933.

MAIWUND.

TO THE EDITOR OF THE R.U.S.I. JOURNAL.

SIR,—On pages 755 to 760 of the JOURNAL for November, 1933, there is an account of the Battle of Maiwund taken from extracts of the diary of the late General Sir Horace S. Anderson, K.C.B., who was my father; consequently I should like to point out a misquotation.

Regarding the Afghan casualties, the last line of page 759 and first line of page 760, the extract as quoted reads :—"The Afghans themselves stated their losses to have been 'Shumar,' i.e., countless, etc., etc." What my father wrote was :—"The Afghans themselves stated their losses to have been "Be Shumar" etc., etc." "Shumar" means "counting"; "Be" (pronounced "Bay") is a preposition, meaning "without," hence the meaning "without counting" or "countless"; namely, so numerous were their casualties, that they could not be counted.

E. S. J. ANDERSON, Lt.-Colonel,
Indian Army, Retired.

January, 1934.

SUPPLY AND TRANSPORTATION—A CORRECTION

TO THE EDITOR OF THE R.U.S.I. JOURNAL.

SIR,—In the article entitled as above, which appeared in the November issue of the JOURNAL, an inaccuracy crept in, to which the writer must plead guilty.

On page 811 it is stated that "all repairs to mechanical load carrying vehicles, employed either in transport or with combatant units, are to be effected by one Service, while repairs to fighting or specialist vehicles peculiar to combatant units will be carried out by the other." This is, of course, no longer the situation to-day, when the dividing line in repair as between the Ordnance and the R.A.S.C. is that the latter is responsible for all vehicles belonging to it or driven by its own personnel. The main argument followed in the article however remains unaffected, the position being that the work of repairing M.T. vehicles is divided, and so duplicated by two Services.

G. C. SHAW, Major, R.A.O.C.

January, 1934.

GENERAL SERVICE NOTES

BRITISH AIR POLICY

The following are extracts and a summary of a speech by the Marquess of Londonderry, Secretary of State for Air, in reply to a motion by the Duke of Sutherland in the House of Lords on 29th November last :—

The question which the Noble Duke has asked this afternoon, and a similar question which is being put in another place, indicate that public opinion is troubled and anxious and requires information, and perhaps I might also say reassurance, on a number of aspects . . . I welcome this quickening interest in aviation . . . because I am convinced that whatever sea power may have meant to this country in the past, and whatever it may mean to-day either as a defence and a protection or as the medium of commercial activity, that older power must in future be accompanied by air power . . . This latter need not and cannot replace the former. But the functions of sea power and air power are complementary and closely interwoven, as well in the field of commercial activity as in the matter of national defence.

Experience has shown us, and is showing us more every day, that the aeroplane will be a weapon of which nations will make enormous, if not preponderating, use, if, in spite of the bitter lessons of the past, they are still determined to make war. There is no doubt that in aviation resides the power for man to wage war on a scale hitherto uncontemplated, and this is one of the main reasons why, in the years following the War, efforts have been made and are still being made, first of all to persuade the world never to wage war at all, . . . secondly, if treaties and undertakings are not capable at this present stage of civilization of securing the fulfilment of what is no doubt the universal desire that peace should be maintained, then that war should be so restricted as to save man from the worst consequences of his own folly.

On the subject of the limitation of armaments there are many and different schools of thought, ranging from a completely pacifist idealism, through the acceptance of proper recognition of defensive armament, to the extreme school of militaristic domination. But there is no difficulty in recognising the conception which is mainly held in the British Empire. Difficulty only arises when those of us who are responsible for defence desire to translate that conception into practical terms. We have then to stand a crossfire of criticism. From one direction we are blamed as being the evil spirits who foster and foment discord, and who by the mere discharge of the responsibilities placed on our shoulders, stimulate the warlike spirit with all the dangers engendered by that spirit. From the other direction we are charged with imperilling not only the lives and property of His Majesty's subjects, but the peace of the world as well, by neglecting to maintain at their proper standard the defensive forces of the realm.

The work of a Minister of Defence is the continual study of these problems; the first being the necessity for Great Britain to take the lead in propounding a policy of peace which will receive the general approval and support of the world. To achieve this, our words of advice must be accompanied, as indeed they have been accompanied, by a practical demonstration of disarmament. Let me speak here of the position of the Royal Air Force alone. . . . When the War closed we were the first air Power in the world. From the gallant but inconsiderable air-arm with which we took the field in 1914 we developed the tremendous air weapon of offence and defence, the existence of which as much as anything else brought about the termination of hostilities. After the Armistice, as an earnest of our pacific intentions and as a proof of the genuine character of our propaganda for limitation of air armaments, we dispersed the greater part of our vast air fleets, until this country to-day is *fifth* only of the world's air powers in terms of first-line strength. All countries have not made public statements of their current strength, but official figures are available for France and this country. In our own case the figure is approximately 850; in the case of the French Air Force the corresponding total is about 1,650; the other powers which at present outnumber us, in order of relative strength, are the Soviet Republic, the United States, and Italy. In the absence of official statistics I cannot give definite figures in respect of these countries, but according to such information as has been made public the following would appear to be the approximate position:—

The Soviet Republic	between 1,300 and 1,500
United States of America	between 1,000 and 1,100
Italy	between 1,000 and 1,100.

Our example has, unhappily, elicited no response whatever in any quarter of the world. It is, therefore, a path which can obviously no longer be followed and we must, however reluctantly, abandon the policy of unilateral disarmament which in the present unfortunate state of international affairs it is manifestly not only useless, but even dangerous for us to pursue further . . . His Majesty's Government have made it plain in their successive pronouncements at Geneva that they recognise the need for a one-Power standard in the air for this country. Now parity can be achieved in four ways. First by a complete abolition of naval and military aviation with adequate safeguards—parity, that is, at zero. Secondly, by other nations reducing first to our level and thereafter to such lower figures as may be ultimately agreed. Thirdly, by this country building up to the level of the strongest air power in the world. And fourthly, by a combination of the second and third alternatives. . . . We have offered to go to any lengths in this matter if other nations will do the same. We have indeed stated our willingness to consent to the complete abolition of naval and military aviation, provided only that there can be devised an effective scheme for the international control of civil aviation which will prevent all possibility of the misuse of civil aircraft for military purposes. It is manifest that the prohibition of military aircraft and an agreement not to make use of so powerful a weapon cannot give any real sense of security so long as there is no effective guarantee that civil aircraft cannot in any circumstances be so misused.

It now appears that there are nations which are not prepared to agree to the abolition of naval and military aviation; and it is impossible to deny that there are to-day great practical difficulties in the way of so far-reaching a measure . . . We cannot accept the continuance of our present inferiority, and if parity cannot be secured by reductions elsewhere, then the converse proposition must follow, and we shall have no option but to begin to build upwards, whilst continuing our

efforts to secure international agreement in fixing parity at the lowest level to which other nations will subscribe.

Reference has been made to recent developments in certain foreign countries, and I have been asked to confirm their accuracy. It is true that, under the terms of the Industrial Recovery Act, the President of the United States has sanctioned expenditure designed to provide the American Air Services with a substantial accession of strength. It is also the fact that the Japanese and Soviet Governments have embarked on large programmes of increases in their Air Forces. The Russian Minister of War has indeed announced the intention of the Soviet Government to proceed rapidly with the development of an even more powerful Air Force than they at present possess, in the publicly expressed belief that that Power which is strongest in the air is strongest all round. These developments abroad are naturally causing me grave concern, and His Majesty's Government are devoting the most earnest attention to their inevitable reactions on British policy . . .

The appropriate steps . . . to ensure that the British Empire is at least as strong in the air as any other great nation are, as I have said, at the present moment under examination by His Majesty's Government, and I do not want to prejudice that examination. I merely repeat that we have made the attainment of parity in the air, as at sea, one of the main planks of our policy, and you can rest assured that I recognise my responsibilities in this matter and shall not hesitate, if necessary, to propose such concrete measures as are necessary to implement that policy.

(*See also "Internationalization of Aircraft" in the* INTERNATIONAL SITUATION p. 154).

CZECHO-SLOVAKIA.

FORMATION OF A SUPREME COUNCIL FOR NATIONAL DEFENCE.—At a Cabinet meeting on 7th October it was decided to establish a Supreme Council for National Defence, and the statutes and regulations for giving effect to this decision were approved.

The new Supreme Council will consist of the Prime Minister as President (subject to the right of the President of the Republic to preside when he wishes), and the Ministers of National Defence, Foreign Affairs, Interior and Finance. The Inspector General of the Army or the Chief of the General Staff will also take part in a consultative capacity. The Army Council and the Inter-ministerial Committee for National Defence will remain as auxiliary organs of the Supreme Council.

ROYAL TOURNAMENT, 1934.

The Royal Tournament for 1934 will be held at Olympia, West Kensington, London, from Thursday, 17th May, to Saturday, 2nd June, inclusive.

NAVY NOTES

GREAT BRITAIN

Flag Appointments.

Portsmouth Command.—Admiral Sir John D. Kelly, G.C.V.O., K.C.B., succeeded Admiral Sir Arthur K. Waistell, K.C.B., as Commander-in-Chief, Portsmouth, on 17th January, 1934.

First Battle Squadron.—Vice-Admiral C. M. Forbes, Third Sea Lord and Controller since 1st March, 1932, is to be Vice-Admiral Commanding First Battle Squadron, and Second-in-Command, Mediterranean, in succession to Vice-Admiral Sir Roger R. C. Backhouse, K.C.B., C.M.G., to date about April, 1934.

Third Sea Lord.—Vice-Admiral R. G. H. Henderson, C.B., is to be a Lord Commissioner of the Admiralty and Controller, in succession to Vice-Admiral C. M. Forbes, to date about April, 1934.

Reserve Fleet.—Vice-Admiral E. A. Astley-Rushton, C.B., C.M.G., is to be Vice-Admiral Commanding Reserve Fleet, in succession to Vice-Admiral W. Munro Kerr, C.B., C.B.E., to date 24th April, 1934.

Rear-Admiral, Second Battle Squadron.—Rear-Admiral M. K. Horton, D.S.O., succeeded Rear-Admiral R. M. Colvin, C.B., C.B.E., as Rear-Admiral, Second Battle Squadron, on 12th December. His flag was hoisted at Devonport in H.M.S. " Malaya," in which it will be flown until H.M.S. " Barham " joins the Squadron after reconstruction.

Director of Personal Services.—Rear-Admiral J. F. Somerville, D.S.O., is to be Director of Personal Services, in succession to Rear-Admiral A. L. Snagge, C.B., to date 18th May, 1934.

Personnel.

Special Retirement Terms.—Owing to the excess of senior Lieutenants and Lieutenant-Commanders, the Admiralty have reluctantly been compelled to intimate to a certain number of officers of these ranks that it will not be possible to give them further employment. The Admiralty desire that so far as possible the excess should be reduced by voluntary retirements under the scheme already in existence for that purpose; they have accordingly approved an additional scheme for voluntary retirements applicable both to officers under 40 years of age covered by the existing scheme and also to certain officers not covered thereby.

The new scheme offers to certain officers not covered by the existing scheme retirement with a lump sum gratuity. It further offers to those officers who are covered by the existing scheme the option of retirement on gratuities, instead of the annual rate of retired pay for which the existing scheme provides, if they so prefer. The gratuities offered are :—

Lieutenant-Commanders (under 40 years of age), a gratuity of £2,500 with an addition of £200 for each year's seniority in the rank of Lieutenant-Commander.

Lieutenants (confirmed in that rank on 30th June, 1934), £1,000 up to three years' seniority as Lieutenant, £1,200 on attaining three years' seniority, and £200 for each further year's seniority.

The offer made in the new scheme is open from 1st January, 1934, to 1st January, 1935. It is open to officers ex-Mate and ex-R.N.R., as well as ex-Cadet, but not to officers on the Supplementary List or officers ex warrant rank.

ENGINEER PROMOTION ZONES.—Zones of promotion for the selections in the engineering branch will be as follows until further orders :—For Engineer Captain and Captain (E), 8–11 year's seniority as Engineer Commander or Commander (E) inclusive, on the dates on which the promotions are made, viz., 30th June and 31st December each year. For Engineer Commander and Commander (E), 2½ years' seniority and over as Engineer Lieutenant-Commander or Lieutenant-Commander (E) on the dates on which the promotions are made, viz., 30th June and 31st December each year.

THE LAST ENGINEER LIEUTENANTS.—With the promotion on 1st January of Engineer Lieutenants G. D. Wilson and J. A. Ruddy to Engineer Lieutenant-Commander, there are no more Engineer Lieutenants on the active list. This is the sequel to the decision taken eight years ago that on or after 1st February, 1926, all promotions of engineer officers to the equivalent rank of Lieutenant would be to the rank of Lieutenant (E). Previously this rank had been reserved for officers ex-Cadets.

GEDGE MEDAL AWARD.—The Gedge Medal and Prize for 1933, which commemorates Staff-Paymaster J. T. Gedge, R.N., the first British officer of all the Forces to be killed in the late War, and is offered to the Paymaster Sub-Lieutenant passing the best examination, has been awarded to Paymaster Sub-Lieutenant J. W. Maulden, R.N., of H.M.S. " Shropshire."

NEWMAN PRIZE AWARD.—The Newman Memorial Prize for 1932–33, which commemorates the late Mr. Edward Newman, R.N., Chief Engineer of Portsmouth Dockyard, and is offered to the officer taking first place in practical engineering when specialising, has been awarded to Lieutenant (E) I. G. Aylen, R.N., of H.M.S. " Rodney."

EGERTON PRIZE AWARD.—The Commander Egerton Memorial Prize for 1933, which commemorates Commander F. G. Egerton, R.N., who was mortally wounded at Ladysmith in 1899, and which is offered to the officer passing the best examination in practical gunnery when specialising, has been awarded to Lieutenant H. G. T. Padfield, R.N., of H.M.S. " Excellent."

LANGUAGE STUDY.—Their Lordships desire it to be known that volunteers are required for the study of Dutch, French, German, Modern Greek, Italian, Japanese, Portuguese, Russian, Scandinavian and Spanish. No order of priority is intended, and applications for study abroad will be considered on their merits.

SIGNAL BRANCH CHANGES.—A re-organization of the Signal and Telegraphist Branches came into operation on 1st January. It is the outcome of the report of a Committee set up to investigate the conditions of service and pay, having regard to the development and importance of efficient communications in the Navy.

The recommendations indicate clearly that higher technical qualifications with increased responsibility are required at the present time. New non-substantive rates with increased pay are a feature of the scheme. They place the prospects and pay of the Signal and Telegraphist Branches on an equivalent basis with those of the Seaman Branch. The new rates are :—Visual Signalman, 1st, 2nd and 3rd

class, with specialist pay of 1s., 8d., and 4d. a day respectively; Trained Operator (V/S), with pay of 2d. a day; Wireless Telegraphist, 1st, 2nd and 3rd class, with pay of 1s., 8d. and 4d. a day respectively; Trained Operator (W/T), with pay of 2d. a day.

The 1st class rating will be granted only after a special course and examination at the Signal School, and those who pass will be employed in flotilla leaders and above, in responsible positions in flagships, and as instructors in the Signal School and senior instructors in other training establishments.

RECRUITING.—Vice-Admiral Sir Dudley Pound, Second Sea Lord, speaking at the prize-giving on board the training ship "Mercury" at Hamble on 16th December, said that in numbers the personnel of the Navy had been on the down grade for some time, but had now got to rock bottom. During the next four or five years we shall be recruiting something like 8,000 men a year; but this will be mainly for the normal replacement of time-expired men.

NEW CONSTRUCTION.

THE 1930 PROGRAMME.—H.M.S. "Achilles," the first of the three cruisers of this programme, completed to full complement at Chatham on 10th October for service in the Second Cruiser Squadron, Home Fleet, and left at the end of the month for Gibraltar, arriving on 3rd November and remaining until 22nd November. She returned to Portland in record time, the run being accomplished in 39 hours. The weather through the Bay of Biscay was favourable, but previously conditions had not been too good. The average speed was 28½ knots. Joining her Squadron after Christmas leave, the "Achilles" left with the Fleet on 12th January for Arosa.

H.M.S. "Orion," of the same class, commissioned for trials on 28th October, paid off into dockyard control on 9th November, and commissioned for service on 16th January. She was due to spend the month of February working up at Gibraltar.

The "Neptune," the last ship of the group, commissioned at Portsmouth for trials on 28th November, and paid off into dockyard control there on 13th December on their conclusion. She is due for completion in February. From the date of laying down to commissioning for service, these cruisers have occupied between 2 years 4 months and 2 years 6 months; but from date of authorisation to commissioning for service the period is between 3 years 8 months and 4 years.

THE 1931 PROGRAMME.—Of the three cruisers of the 1931 programme, the beginning of which was deferred until early in 1933, the "Ajax" will be launched at the Vickers-Armstrongs Yard, Barrow, on 1st March; and the "Arethusa" at Chatham Dockyard on 6th March. The other cruiser is the "Amphion," building at Portsmouth.

Of the eight destroyers in this programme, the "Escapade" was due to be launched on 30th January; the "Echo" on 16th February; and the "Eclipse" on 29th March.

Of the three submarines in the programme, the "Severn" was launched at Barrow on 16th January; and the "Sealion" was due for launching in February and the "Shark" in May.

The programme also included four sloops, of which the "Grimsby" was launched on 19th July, 1933; the "Leith" on 9th September; the "Halcyon" on 20th December and the "Skipjack" on 18th January, 1934.

THE 1932 PROGRAMME.—All the vessels of this programme are now on the stocks. None has yet been launched. The submarines "Clyde" at Barrow and "Salmon" at Birkenhead may be launched during March.

THE 1933 PROGRAMME.—An important modification of the cruiser programme of the 1933 Navy Estimates has been announced by Sir Bolton Eyres Monsell, the First Lord. The Government, he said, had adopted a policy of building cruisers of comparatively small tonnage in the hope that other nations would follow our lead in reducing the size and armaments of these ships, but the hope had not been realised. If the British programme already approved were carried out our cruisers would be definitely inferior to those now being developed by other Powers. The Government had decided, after anxious consideration and with much regret, to revise the programme so as to include two cruisers of a new type of about 9,000 tons, with increased armament; and one of the "Arethusa" type of about 5,200 tons. The original programme included one "Leander" type cruiser of 7,000 tons and three "Arethusas." The alteration will not involve any increase but may cause some small reduction in the cost of the 1933 programme.

It was announced on 10th January that the Admiralty had decided to begin the construction of a third sloop of the 1933 programme at Chatham Dockyard, and the vessel will be named H.M.S. "Deptford." The convoy sloop "Bittern" was ordered in October from John Brown and Co., Ltd., Clydebank; and the coastal sloop "Kingfisher" in November from the Fairfield Shipbuilding and Engineering Co., Govan.

Distribution of the destroyer contracts of the 1933 programme was announced on 17th January as follows:—Two vessels to be built by each of the following firms—Fairfield Shipbuilding and Engineering Co., Ltd., Glasgow; Alexander Stephen & Sons, Ltd., Glasgow; John I. Thornycroft & Co., Ltd., Southampton; and Vickers-Armstrongs, Ltd., Barrow-in-Furness.

The following names have been assigned to ships of the 1933 programme:—
Cruisers ("*Minotaur*" *class*),—"Minotaur," "Polyphemus."
Cruiser ("*Arethusa*" *class*).—"Penelope."
Flotilla Leader.—"Grenville."
Destroyers ("*Greyhound*" *class*).—"Greyhound," "Griffin," "Garland," "Gallant," "Gipsy," "Grenade," "Grafton" and "Glowworm."
Submarine Minelayers ("*Porpoise*" *class*).—"Narwhal" and "Grampus."
Submarine ("*Swordfish*" *class*).—"Seawolf."
Sloops ("*Grimsby*" *class*).—"Deptford" and "Londonderry."
Sloop Minesweeper ("*Halcyon*" *class*).—"Speedwell."
Convoy Sloop.—"Bittern."
Coastal Sloop.—"Kingfisher."

MATERIAL.

DEVONPORT DEPOT RENAMED.—H.M.S. "Vivid" has been renamed H.M.S. "Drake" as from 1st January, 1934. The Devonport Depot had been known as the "Vivid" for forty-four years, since 1st January, 1890, when the paddle-wheel special service vessel of that name was commissioned to replace the "Royal Adelaide."

DESTROYER RENAMED.—H.M. destroyer "Salmon" has been renamed H.M.S. "Sable." This change follows the building of a new submarine known as the "Salmon," laid down at Birkenhead on 15th June, 1933, and due to be launched in March.

RECONSTRUCTION.—H.M.S. " Barham " was commissioned on 11th January at Portsmouth, with a Devonport crew, after being out of commission for three years, during which she had undergone reconstruction at an estimated cost of £1,024,448. Under the Washington Treaty of 1922 the " Barham " was to be scrapped in 1935 and replaced by a new vessel, but under the London Treaty of 1930 new construction in this class was deferred for six years, so that the earliest date at which the " Barham " can be replaced is about 1941 or 1942.

EXERCISES AND CRUISES.

CONVOY PROTECTION.—Notes on a Mediterranean Fleet exercise held on 27th, 28th and 29th June, 1933, were circulated to the Press on 28th November. The exercise was in convoy protection by the system known as " evasive routeing," and was carried out with an imaginary trade route between Malta and Corfu. Admiral Sir William Fisher, with three battleships, one aircraft carrier, six cruisers and two flotillas of destroyers, defended the route against a " Blue " raiding force under Vice-Admiral Sir Roger Backhouse.

The " Blue " raiding squadron played havoc on the " Red " trade route, destroyed five merchantmen in 36 hours, and an aircraft carrier and two cruisers were lost by " Red " in their defence. Two days' excellent practice was afforded the cruiser Captains in both attack and defence, and the lesson of the exercise was, in the words of the Admiralty notes, " to make our trade secure the Navy must have cruisers, in numbers sufficient to be always where they are wanted and strong enough to fight the enemy when he appears."

HOME FLEET CRUISE.—A contingent of the Home Fleet is visiting the West Indian ports during the spring cruise, as in 1931 and 1932. It includes the " Nelson," " Rodney," " Malaya," " Valiant." " Leander," " Achilles," and the destroyers " Kempenfelt," " Crusader," " Comet," " Crescent " and " Cygnet "; with the aircraft carrier " Furious." This force parted company from the rest of the Fleet at Arosa Bay on 17th January. After visiting Trinidad, Barbados, and a number of other places, it is due at the Azores from 8th to 10th March, prior to combined fleet exercises which begin on the latter date, after which the combined fleets will visit Gibraltar.

GROUNDING OF H.M.S. " NELSON."—On leaving Portsmouth Harbour for the spring cruise on 12th January, H.M.S. " Nelson," Captain Patrick Macnamara, flagship of Admiral Sir William Boyle, K.C.B., ran aground on Hamilton Bank at 9 a.m., and remained fast until 6 p.m. The ship was proceeding out of harbour with an ebb tide when she got out of control and ran her nose on the Bank. On being refloated she returned to the Dockyard for examination, where it was found that no damage had been caused. Owing to the strong south-westerly gales which prevailed, it was decided to postpone the departure of the ship until more favourable conditions obtained, and Admiral Sir William Boyle with his staff proceeded to Devonport and joined H.M.S. " Rodney," which left for Barbados on 16th January. The " Nelson " eventually left Portsmouth on 19th January, a week later than first arranged. She arrived at Barbados on 30th January, re-embarked the Commander-in-Chief from the " Rodney," and left the same day for Trinidad in accordance with programme.

H.M. Ships of heavy tonnage are placed in charge of an Admiralty Pilot when entering or leaving any of the Home Ports.

MEDITERRANEAN FLEET.—The Mediterranean Fleet made a short winter cruise from 9th to 25th January. The battleships visited the Aegean; the First Cruiser

Squadron went to Corfu ; the Third Cruiser Squadron to Tunis ; The " Coventry " and destroyers to Bizerta, Tripoli (Lybia), Sfax, Susa, Philippeville and Bougie ; and the " Douglas," " Resource " and submarines to Bona.

China Station.—Following the bombing of Foochow the Chinese Government on 1st January sent Notes to the Powers requesting them to withdraw their nationals from Foochow to Nantai Island and from Amoy to Kulangsu Island. The " Cornflower," Commander E. W. Bush, D.S.C., left Hong Kong on 1st January for Amoy. The destroyer " Verity," Lieutenant-Commander S. A. Buss, relieved the " Whitehall," Lieutenant-Commander G. N. Brewer, at Foochow in December, and during this month prevented a rebel armed party from searching the British steamer " Haiching."

Conference at Singapore.—Another periodical conference to discuss matters of common interest to the Fleets in the East was held at Singapore in January. The Commanders-in-Chief, China and the East Indies—Admiral Sir Frederic Dreyer and Vice-Admiral M. E. Dunbar-Nasmith, V.C.—were present in their respective flagships, the " Kent " and the " Hawkins." There were also present from the China Station the cruiser " Suffolk," the sloop " Falmouth," the aircraft carrier " Eagle " and the destroyers " Veteran " and " Wren." The Rear-Admirals Commanding, Australian Squadron and New Zealand Division—Rear-Admirals R. C. Dalglish and F. Burges Watson—also attended, proceeding to Singapore by passenger steamer.

Training Cruise.—H.M.S. " Frobisher," Captain H. A. Forster, M.V.O., left Sheerness on 15th January to carry out the following programme :—Trinidad, 30th January to 2nd February ; Tobago, 3rd to 7th February ; Grenada, 7th to 12th February ; Barbados, 13th to 27th February ; St. Lucia, 28th February to 7th March ; Antigua, 8th to 13th March ; St. Kitts, 13th to 16th March ; and to return to Chatham 5th April.

Miscellaneous.

Submarine Mishap.—Submarine " L.26," Lieutenant-Commander John H. Lewes, was stranded off Paterson's Rock, Mull of Kintyre, on 7th October. The following day, when the vessel was in Campbeltown Loch, an explosion occurred on board, as a result of which two men were killed and nineteen injured. A court-martial was held at Devonport on 25th October for the trial of the commanding officer, on two charges connected with the navigation of " L.26," and on a third charge of negligent performance of duty in omitting to ensure that a complete examination of the batteries was carried out before beginning to charge them. He was found guilty on all three charges and sentenced to be dismissed from " L.26 " and to be severely reprimanded.

Having reviewed the proceedings, the Admiralty announced on 19th December that they were satisfied that no responsibility attached to Lieutenant-Commander Lewes for the explosion. They accordingly reduced the sentence to one of a severe reprimand in respect of the navigational faults, and reappointed him in command of " L.26 " as from the date of the court-martial.

Salvage of Submarines.—The First Lord of the Admiralty hopes, when introducing the Navy Estimates, to be in a position to give further information concerning British policy in regard to submarine salvage operations. Experiments with a view to the solution of problems involved in raising submarines were carried out by us between 1929 and 1931, " L.4 " being used for the purpose. Valuable experience was also gained in the attempt to salve " M.2 " in 1932, and much

useful information was supplied by the United States naval authorities in connection with the salvage of their submarine " S.4."

NAVY WEEK.—Navy Week at the three Home Ports will take place from Saturday, 4th August, to Saturday, 11th August, inclusive, but excluding Sunday, 5th August. Officers and men were invited to submit designs by 1st February for the Navy Week posters and for the front cover of the Navy Week Guide Book.

Rear-Admiral F. L. Tottenham, C.B., C.B.E., was appointed for special duty at the Admiralty from 29th January to co-ordinate the plans and arrangements at the various ports for Navy Week.

ROYAL MARINES

ENTRY AGE LIMITS EXTENDED.—The age limits for first appointments of subalterns in the Royal Marines will be 17½ to 19½ for the June, 1934, and subsequent examinations. Hitherto the age limits have been 18 to 19 years. Examinations are held in June and November each year by the Civil Service Commissioners.

DOMINION NAVIES

ROYAL CANADIAN NAVY

NEW CHIEF OF STAFF.—On 1st January, Commodore Walter Hose, C.B.E., retired from the post of Chief of the Naval Staff, Department of National Defence, Ottawa. He has been succeeded by Captain P. W. Nelles, R.C.N. Commodore Hose entered the " Britannia " as a Cadet in 1890, and was promoted to Commander in 1908. He was lent to the Royal Canadian Navy in 1911 to command the cruiser " Rainbow " and took her to Esquimalt, where he also commanded the Dockyard. He served at sea in the " Rainbow " during the War, and in 1916 was promoted to Acting Captain and took charge of the East Coast Patrols. He was confirmed as Captain in 1918 and made C.B.E. in 1920. During his thirteen years' tenure of the post of Director of the Naval Service and Chief of the Naval Staff, the Royal Canadian Naval Volunteer Reserve has been instituted on his personal recommendation ; it is up to full strength and has a long waiting list. Commodore Hose visited England in connection with the building of the destroyers " Saguenay " and " Skeena " the first ships specially built for the Royal Canadian Navy. He also acted as a Naval Adviser at the Imperial Conferences and the Naval Limitation Conferences in 1923, 1926, 1927 and 1930.

ROYAL AUSTRALIAN NAVY

SUPERINTENDENT OF TRAINING.—Captain H. G. C. Franklin, R.N., has been lent to the Commonwealth Government for about two years from 14th April, 1934, for duty as Captain-Superintendent of Training, Royal Australian Navy, in succession to Captain C. A. M. Sarel, O.B.E., R.N.

NEW DESTROYERS.—The five destroyers loaned to the R.A.N. from the R.N. (see November JOURNAL) arrived at Sydney on 21st December, under the command of Captain A. G. Lilley, R.N. Officers and ratings of the R.N. on passage to China left the flotilla at Singapore, and were replaced by Australian officers and ratings who made the journey there specially. Numerous exercises and evolutions were carried out to provide experience for the crews.

SOUTH AFRICAN NAVAL SERVICE

REDUCTIONS AND ECONOMIES.—The Union of South Africa, which formerly contributed £85,000 a year towards the upkeep of the Royal Navy, has since 1921 maintained the South African Naval Service instead. Severe reductions in this force took effect during 1933.

On 1st May, the surveying ship "Protea" was taken over by Simonstown Dockyard for disposal and has since been sold as a pleasure yacht. The Union Government is to continue the hydrographical survey of South African waters by means of the S.A. fishery research ship "Africana." The trawlers "Immortelle" and "Sonneblom," which have afforded instruction in minesweeping, etc. to the South African R.N.V.R., have been taken over by the Royal Navy. The "Immortelle" transferred her training class in December to H.M.S. "Weston."

From 1st September, 1933, Lieutenant-Commander T. M. Goddard, of the "Immortelle," became Officer-Instructor to the R.N.V.R. (S.A.) Bases at Cape Town and Port Elizabeth, and Lieutenant-Commander H. N. C. Webber, of the "Sonneblom," of the R.N.V.R. (S.A.) Bases at Durban and East London. Captain R. Penrose FitzGerald, R.N. (retired), relinquished the post of Officer Commanding, S.A. Naval Service, at the beginning of 1933. The saving to the Union of the foregoing changes is estimated at £35,000 a year. The permanent personnel on the establishment of the S.A.N.S. has been reduced from about 160 to 60.

DISBANDMENT.—A Capetown message on 31st January stated that the South African Naval Service would cease to exist in its old form on 31st March, when the Imperial Squadron will take over the training of all young South African naval reservists.

OFFICERS LOANED.—The conditions under which officers of the R.N. loaned to the S.A.N.S. will serve in future were set forth in Admiralty Fleet Order 69, of 11th January, 1934.

FOREIGN NAVIES

BRAZIL

TRAINING SHIP LAUNCHED.—The training ship "Almirante Saldanha" was launched for the Brazilian Navy at the Barrow Works of Vickers-Armstrongs, Ltd., on 19th December.

The vessel will displace 3,325 tons, and will be schooner rigged on four masts, with topsails and topgallant sails on the foremast. Auxiliary power will be provided by Vickers heavy oil engines, giving a speed of 11 knots. Four 4-in. and other quick-firing guns will be carried.

DENMARK

NEW TORPEDO-BOATS.—A second vessel of the "Glesten" class, the "Hogen," has been launched. The "Glesten" is nearing completion. These are torpedo-boats of 285 tons, with a designed speed of 27.5 knots, and an armament of two 3.5-in. and four machine guns, and six torpedo tubes. They are also fitted to lay mines and drop depth charges.

FRANCE

COASTAL MOTOR BOATS.—Another of the small motor-driven torpedo boats, to which reference was made in the last JOURNAL, was tried at Saint Nazaire in December. This vessel, temporarily known as the "B.10," is 60 ft. long by 15 ft. beam, and has two internal combustion engines which each develop 1,000 h.p. It is designed for 55 knots, which it is hoped will be exceeded. Reports have appeared in certain sections of the British Press implying that these are epoch-making craft which, owing to their high speed and small size, will be immune from air attack, and that they will ultimately replace the large and comparatively slow vessels of normal fighting types. In fact, they are very much like our coastal motor boats, which, on the occasion when they were attacked by German aircraft, suffered very severely. Their speed is little or no safeguard as compared to the very much higher speed of aircraft and they are very vulnerable. They cannot operate in bad weather and have a limited radius of action.

TRAINING CRUISE.—The training cruiser "Jeanne d'Arc," which is making a world voyage of some 28,000 miles, arrived at Capetown on 29th December with 154 cadets on board in addition to her crew of 550. The British Commander-in-Chief, Vice-Admiral E. R. G. R. Evans, entertained the Captain and Commander to dinner at Admiralty House, Simonstown, and a dance was also held on board H.M.S. "Dorsetshire."

NEW CONSTRUCTION.—The new construction work at present in hand for the French Navy includes the battleship "Dunkerque," laid down in December, 1932, and due for launching about the spring of 1934; seven cruisers—the "Algerie," of 10,000 tons, and "La Galissonnière," "Jean de Vienne," "Marseillaise," "Gloire," "Montcalm," and "Georges Leygues," all of 7,600 tons; one cruiser-minelayer, the "Emile Bertin"; seven flotilla leaders—the "Chevalier Paul," "Fantasque," "Malin," "Audacieux," "Terrible," "Triomphant," and "Indomptable"; and thirteen submarines.

NEW COMMANDER-IN-CHIEF IN THE FAR EAST.—Vice-Admiral Descottes-Genon has been appointed Commander-in-Chief of the French Naval Forces in the Far East on the completion of his term of command by Vice-Admiral Berthelot.

LAUNCH OF "LA GALISSONNIÈRE."—The first of the new class of six cruisers, "La Galissonnière," was launched at Brest on 18th November. As stated above, she will displace 7,600 tons and have a speed of 32.5 knots. The armament will be nine 5.9-in. guns in triple turrets, eight 3-in. guns and four 21-in. tubes. She will be fitted with a catapult and will carry two aeroplanes.

GERMANY

DEATH OF ADMIRAL VON INGENOHL.—Admiral Friedrich von Ingenohl, who was in command of the German High Seas Fleet during the first six months of the War, died on 19th December, 1933, at the age of seventy-six. After the Dogger Bank action, he was removed from the High Seas Fleet and given the Baltic Command, retiring in August, 1915.

THE "EMDEN."—The first post-War cruiser, the "Emden," is now undergoing large alterations at Wilhelmshaven. It is understood that she is being converted to burn oil fuel only, instead of coal and oil; it is also very probable that her armament is being modernized and remounted in triple turrets on the centre line, as in later ships.

ITALY

NAVAL POLICY.—A report presented to the Chamber of Deputies in the first week of January by Signor Medici del Vascello expressed the view that while the Disarmament Conference is at a standstill there has already begun in Japan, the United States and Great Britain an ominous increase of naval construction. According to the reporter, the three signatories of the complete naval pact of London seem equally determined to increase the tonnage of their fleets up to the limits allowed them before the opening of the next naval conference in 1935.

Various writers in this country have pointed out that the statements in the Italian memorandum are not borne out by the facts so far as Great Britain is concerned, as her building programmes are well below the London Treaty limits.

On 11th January, speaking in the Senate on the Navy Estimates, Admiral Cavagnari, Naval Under-Secretary, said that it was most probable that Italy would utilise the full quota of capital ships in accordance with the Washington Treaty in the near future. For this purpose, 172,000,000 lire (about £1,800,000 at par) would be available for spending in the financial year 1934–35.

JAPAN

NEW SUBMARINE TENDER.—The submarine tender "Taigei" ("big whale"), which is building at Yokosuka, was launched late last year.

RIVETLESS CONSTRUCTION.—A second "rivetless" destroyer, the "Shiratsuyu," of 1,378 tons, was due to be laid down in the Sasebo Dockyard before the close of 1933. This is reported to be the sequel to the success of this form of construction in the "Hatsuharu." The "Shiratsuyu" is the seventh of the twelve destroyers approved under the 1931 Replenishment Plan.

TORPEDO BOAT FLOTILLAS.—Flotillas of torpedo boats, says a Tokio message, are to be built instead of the heavier and more costly destroyers completed hitherto. This is believed to be a better way of utilising the tonnage allowed to Japan by the London Naval Treaty. Four of the craft were laid down under the 1931 programme, and one was launched on 19th December, and named the "Hatsukari." The vessels are of 527 tons, with a speed of 26 knots, and an armament of three 4.7-in. guns and four torpedo tubes.

It will be remembered that under article 8 of the London Naval Treaty, naval surface vessels of 600 tons displacement and under are exempt from limitation. Japan, therefore, can build up to her allotted tonnage in destroyers and as many of the 527-ton torpedo boats as she desires.

PORTUGAL

COMPLETION OF THE "LIMA."—The destroyer "Lima," the second of a class of five which Messrs. Yarrow & Co., Ltd., Glasgow, have in hand for the Portuguese Navy, has been completed. As with the first ship, the "Vouga," the length overall is 323 ft., and the full load displacement about 1,600 tons. The armament includes four 4.7-in. guns, two forward and two aft; three 40 mm. anti-aircraft guns, two aft and one between the funnels; and two quadruple 21-in. torpedo tubes.

UNITED STATES

SECRETARY'S REPORT.—The following points are taken from the Annual Report of Mr. Swanson, Secretary of the Navy, which was published on 2nd December, 1933:—

The outstanding event of the year was the allocation of funds under the National Industrial Recovery Act to construct thirty-two naval vessels. No such building programme had been undertaken by the country since 1916.

It alleviates the serious condition of the private shipbuilding industry, which was practically without work. "This industry is vital to the maritime and general economic welfare of the country, as well as to the national defence."

To attain and maintain a Navy of Treaty strength we should have a progressive programme of ship construction each year. The Navy has not had such a programme in the past.

Of the signatories to the Naval Treaties, we alone have not undertaken an orderly building programme designed to bring the Navy up to Treaty strength. The time has come when we can no longer afford to lead in disarmament by example.

Even when taking into consideration the present building programme, the United States would still have to construct a hundred and one additional ships to be at full Treaty strength on 31st December, 1936.

On 30th June, 1933, the number of commissioned line officers on active duty was 5,929, of whom 3,733 were performing duty at sea. On that date there were 2,060 officers in the staff corps of the Navy, 452 of them being on duty at sea.

Funds were provided for an enlisted strength of 79,700 men. The percentage of re-enlistments rose from 90.07 in the previous year to 93.25, reflecting economic conditions; re-enlistments may be expected to decrease as business conditions approach normal.

As regards the 15 per cent. cut in pay, I recommend that the full pay scale be restored to naval personnel as soon as practicable, together with longevity and other credits, and normal increases upon promotion.

The Navy had 919 serviceable aeroplanes on hand at the end of the fiscal year 1933.

CRUISER LAUNCHED.—The 10,000 ton cruiser "Astoria" was launched on 16th December, 1933, in an advanced state of completion. She was laid down on 1st September, 1930. For the first time since prohibition was adopted thirteen years ago, champagne was used at the naming ceremony.

NEW BUILDING PROGRAMME.—The Navy Department has prepared a programme designed to bring the fleet up to full Treaty strength by 1939, "and keep it there."

According to the *Army and Navy Journal* of Washington, "if Congress accepts the plan it will not be necessary to go through a long congressional fight every time new ships are needed . . ." Congress is to be asked to authorize the construction of one aircraft carrier, sixty-five destroyers, and thirty submarines by 1939, and to appropriate funds to lay down, during 1934, twelve destroyers and six submarines of this programme. These vessels are in addition to those building under the National Industrial Recovery Act, details of which were given in the November JOURNAL.

ATLANTIC CRUISE.—It is officially announced that the U.S. Fleet will move from its base in the Pacific to the Atlantic during 1934, with the object of giving the personnel experience in that Ocean and to enable the East Coast ships to visit their home ports.

Details of the cruise are not yet settled, but it is expected that the Fleet will pass through the Panama Canal about the end of April and return to the Pacific in the late summer.

A Review of the Fleet is to be held by President Roosevelt in the Hudson River early in June.

ARMY NOTES

HOME

Appointments and Promotions.

H.M. the King has approved the following appointments :—

Colonel H. Street, D.S.O., to be Aide-de-Camp to the King, in succession to Colonel J. V. Campbell, V.C., C.M.G., D.S.O., retired ; Colonel R. Luker, C.M.G., M.C., to be A.D.C. to the King, in succession to Colonel the Hon. C. M. Hore-Ruthven, C.M.G., D.S.O., retired ; Colonel (temporary Brigadier) W. D. S. Brownrigg, D.S.O., to be Aide-de-Camp to the King, in succession to Colonel (temporary Brigadier) D. J. C. K. Bernard, C.M.G., D.S.O., promoted Major-General ; Colonel J. L. Buxton, C.M.G., D.S.O., to be A.D.C. to the King, in succession to Colonel A. P. Wavell, C.M.G., M.C., promoted Major-General.

Colonel (temporary Brigadier and Honorary Brigadier-General) O. F. Phillips, C.M.G., D.S.O., Australian Staff Corps, to be A.D.C. to the King (Additional), in succession to Colonel (Honorary Brigadier-General C. H. Brand, C.B., C.M.G., C.V.O., D.S.O., Australian Staff Corps, retired.

Colonel (temporary Brigadier) A. M. Mills, C.B., D.S.O., Indian Army, to be Aide-de-Camp to the King, in succession to Colonel (temporary Brigadier) J. H. F. Lakin, C.B., C.S.I., Indian Army, promoted Major-General.

Major-General J. F. Martin, C.M.G., C.B.E., M.B., late R.A.M.C., Honorary Surgeon to the Viceroy of India, to be Honorary Surgeon to the King, in succession to Major-General W. H. S. Nickerson, V.C., C.B., C.M.G., M.B., retired ; Colonel A. W. M. Harvey, M.B., Indian Medical Service, to be Honorary Surgeon to the King, in succession to Brevet Colonel J. McPherson, C.I.E., M.B., F.R.C.S. Edin., Indian Medical Service, who has retired.

Major-General Sir William A. Liddell, K.C.M.G., C.B., and Major-General S. H. Sheppard, C.B., C.M.G., D.S.O., to be Colonels Commandant, Royal Engineers, in succession to the late Lieutenant-General Sir Henry M. Lawson, K.C.B., and the late Major-General Sir Reginald U. H. Buckland, K.C.M.G., C.B.

Colonel (honorary Brigadier-General) J. L. J. Clarke, C.M.G., to be Colonel, The East Yorkshire Regiment, in succession to the late Colonel (Honorary Brigadier-General) H. Haggard.

Major-General Sir Steuart W. Hare, K.C.M.G., C.B., to be Colonel Commandant, 2nd Battalion, King's Royal Rifle Corps, in succession to the late Lieutenant-General Sir William Pitcairn Campbell, K.C.B., T.D.

Major-General W. H. S. Nickerson, V.C., C.B., C.M.G., M.B., to be Colonel Commandant, Royal Army Medical Corps, in succession to Major-General Sir S. Guise Guise-Moores, K.C.B., K.C.V.O., C.M.G., who relinquishes that appointment.

The following appointments have been announced :—

Lieutenant-General W. H. Bartholomew, C.B., C.M.G., D.S.O., to be Chief of the General Staff, India, with effect from 9th May next, in succession to General Sir Kenneth Wigram, K.C.B., C.S.I., C.B.E., D.S.O., Indian Army, Aide-de-Camp General to the King, who becomes General Officer Commanding-in-Chief, Northern Command, India, on that date.

Lieutenant-General C. P. Deedes, C.B., C.M.G., D.S.O., Colonel, The King's Own Yorkshire Light Infantry, to be Military Secretary to the Secretary of State for War, with effect from 1st June, 1934, in succession to Lieutenant-General Sir G. Sydney Clive, K.C.B., C.M.G., D.S.O.

Major-General C. P. Heywood, C.B., C.M.G., D.S.O., to be Director of Staff Duties, The War Office, in succession to Major-General Sir Ivo L. B. Vesey, K.B.E., C.B., C.M.G., D.S.O., who is to be promoted in March, to take effect from about June, 1934.

Major-General A. J. Hunter, C.M.G., D.S.O., M.C., to be Director of Personal Services, The War Office, in succession to Lieutenant-General C. P. Deedes, C.B., C.M.G., D.S.O., Colonel, The King's Own Yorkshire Light Infantry, promoted.

Major-General J. Kennedy, C.B., C.M.G., D.S.O., to be Commander of the 1st Division, with effect from 21st April, 1934, in succession to Major-General A. E. W. Harman, C.B., D.S.O., Colonel, The Queen's Bays; Major-General G. W. Howard, C.B., C.M.G., D.S.O., to be Commander of the 5th Division, in succession to Major-General E. T. Humphreys, C.B., C.M.G., D.S.O., to take effect at the end of March, 1934.

Major-General J. R. M. Minshull-Ford, C.B., D.S.O., M.C., to be Commander, 44th (Home Counties) Division, Territorial Army, with effect from 21st April, 1934, in succession to Major-General J. Kennedy, C.B., C.M.G., D.S.O.; Major-General A. J. McCulloch, D.S.O., D.C.M., to be Commander of the 52nd (Lowland) Division, Territorial Army, with effect from 30th March, 1934, in succession to Major-General Sir Walter J. Constable-Maxwell-Scott, Bt., C.B., D.S.O.

Major-General L. I. G. Morgan-Owen, C.M.G., C.B.E., D.S.O., Colonel, The South Wales Borderers, to be Major-General in charge of Administration, Eastern Command, in succession to Major-General G. W. Howard, C.B., C.M.G., D.S.O., to take effect from about March, 1934.

Major-General M. G. Taylor, C.B., C.M.G., D.S.O., to be Major-General in charge of Administration, Aldershot Command, in succession to Major-General E. Evans, C.B., C.M.G., D.S.O., Colonel of the Wiltshire Regiment, who relinquishes the appointment on 1st April, 1934.

Major-General J. J. B. Tapley, D.S.O., has been appointed Director-General, Army Veterinary Services, The War Office, in succession to Major-General W. S. Anthony, C.B., C.M.G.

The King of Egypt has signified his intention, on the recommendation of H.M.'s Government in the United Kingdom, of appointing Lieutenant-Colonel Sir George Stewart Symes, K.C.M.G., K.B.E., D.S.O., to be Governor-General of the Sudan.

The following promotions have been made :—

Major-General E. T. Humphreys, C.B., C.M.G., D.S.O., to be Lieutenant-General.

Colonel R. H. G. Howard-Vyse, C.M.G., D.S.O.; Colonel J. J. B. Tapley, D.S.O.; Colonel D. J. C. K. Bernard, C.M.G., D.S.O.; Colonel C. G. Liddell, C.M.G., C.B.E., D.S.O., to be Major-Generals.

Changes in Designation, Dress, etc.

Dress—Change of Facings, The Prince of Wales's Volunteers (South Lancashire).—H.M. the King has approved of the facings of The Prince of Wales's Volunteers (South Lancashire) being changed from "White" to "Buff," the former colour dating from the territorial changes made in 1881.

Change in Designation.—H.M. the King has approved of the designation of the "15th The King's Royal Hussars" being changed to "15th/19th The King's Royal Hussars."

Battery Title.—H.M. the King has approved of the 6th Medium Battery, R.A., being granted the sub-title of "Seringapatam."

Regimental Colours, Centre Badge.—H.M. the King has approved of the following centre badge for the regimental colours of The Gloucestershire Regiment:—

"Within a laurel wreath upon a pedestal inscribed 'Egypt' a Sphinx."

TERRITORIAL ARMY

Changes in Designation.—The following changes in designation of units of the Royal Army Ordnance Corps, Territorial Army, have been approved:—

Present designation.	*New designation.*
2nd Cavalry Divisional Ordnance Detachment, Royal Army Ordnance Corps (T.A.).	2nd Cavalry Divisional Royal Army Ordnance Corps (T.A.).
42nd (East Lancashire) Ordnance Company, Royal Army Ordnance Corps (T.A.).	42nd (East Lancashire) Divisional Royal Army Ordnance Corps (T.A.).
43rd (Wessex) Ordnance Company, Royal Army Ordnance Corps (T.A.).	43rd (Wessex) Divisional Royal Army Ordnance Corps (T.A.).
44th (Home Counties) Ordnance Company, Royal Army Ordnance Corps (T.A.).	44th (Home Counties) Divisional Royal Army Ordnance Corps (T.A.).
46th (North Midland) Ordnance Company, Royal Army Ordnance Corps (T.A.).	46th (North Midland) Divisional Royal Army Ordnance Corps (T.A.).
47th (2nd London) Ordnance Company, Royal Army Ordnance Corps (T.A.).	47th (2nd London) Divisional Royal Army Ordnance Corps (T.A.).
48th (South Midland) Ordnance Company, Royal Army Ordnance Corps (T.A.).	48th (South Midland) Divisional Royal Army Ordnance Corps (T.A.).
49th (West Riding) Ordnance Company, Royal Army Ordnance Corps (T.A.).	49th (West Riding) Divisional Royal Army Ordnance Corps (T.A.).
50th (Northumbrian) Ordnance Company, Royal Army Ordnance Corps (T.A.).	50th (Northumbrian) Divisional Royal Army Ordnance Corps (T.A.).

Present designation.	*New designation.*
51st (Highland) Ordnance Company, Royal Army Ordnance Corps (T.A.).	51st (Highland) Divisional Royal Army Ordnance Corps (T.A.).
52nd (Lowland) Ordnance Company, Royal Army Ordnance Corps (T.A.).	52nd (Lowland) Divisional Royal Army Ordnance Corps (T.A.).
53rd (Welsh) Ordnance Company, Royal Army Ordnance Corps (T.A.).	53rd (Welsh) Divisional Royal Army Ordnance Corps (T.A.).
54th (East Anglian) Ordnance Company, Royal Army Ordnance Corps (T.A.).	54th (East Anglian) Divisional Royal Army Ordnance Corps (T.A.).
55th (West Lancashire) Ordnance Company, Royal Army Ordnance Corps (T.A.).	55th (West Lancashire) Divisional Royal Army Ordnance Corps (T.A.).
56th (1st London) Ordnance Company, Royal Army Ordnance Corps (T.A.).	56th (1st London) Divisional Royal Army Ordnance Corps (T.A.).

SUMMER CAMP ATTENDANCE.—The *Daily Telegraph* Challenge Cup, awarded annually in the Territorial Army for the best attendance at Camp, has been won jointly this year by the 5th and 6th Battalions, The Sherwood Foresters (Nottinghamshire and Derbyshire Regiment), both Battalions having an attendance of 100 per cent. The Cup will be held by each Battalion for six months. This is the second occasion in succession that the Cup has been won by the 5th Battalion, The Sherwood Foresters, this Battalion being the winners when the Cup was last awarded in 1931. No award was made in 1932 as annual training in camp for the Territorial Army was suspended during that year for reasons of economy.

On only one previous occasion has the Cup been won by a unit with an attendance of 100 per cent.; this was in the year 1925, and the unit was the Tynemouth Heavy Brigade, Royal Artillery. Seventeen units secured an attendance of over 90 per cent. this year, which is the largest number of units in any year since the Cup was instituted. The list is as follows:—

Unit.	*Percentage Attendance.*
5th Battalion, The Sherwood Foresters	100
6th Battalion, The Sherwood Foresters	100
10th Battalion, The Manchester Regiment	97.84
8th Battalion, The Durham Light Infantry	97.35
The Northumberland Hussars Yeomanry	96.25
55th (Northumbrian) Medium Brigade, Royal Artillery	95.31
82nd (Welsh) Field Brigade, Royal Artillery	93.66
46th (North Midland) Divisional Royal Engineers	93.23
5th Battalion, The Northumberland Fusiliers	93.21
7th Battalion, The Durham Light Infantry	93.04
5th Battalion, The Welch Regiment	92.71
4th Battalion, The Northumberland Fusiliers	91.88
8th Battalion, The Sherwood Foresters	91.72
6th Battalion, The North Staffordshire Regiment	91.55
6th Battalion, The Durham Light Infantry	91.22
5th Battalion, The Durham Light Infantry	90.56
6th (Lanarkshire) Battalion, The Cameronians	90.08

DOMINION FORCES

Union of South Arfica.

The former Military Districts have been replaced by six Military Commands, which have been constituted and are now commanded as follows :—

Cape Command :—Headquarters, Cape Town ;
Colonel G. E. Brink, D.S.O.

Eastern Province Command :—Headquarters, East London ;
Lieut.-Colonel W. E. Klerck, O.B.E.

Natal Command :—Headquarters, Durban ;
Lieut.-Colonel K. R. van der Spuy, M.C.

Orange Free State Command :—Headquarters, Bloemfontein ;
Lieut.-Colonel A. J. F. Prius, D.T.D., M.C.

Roberts' Heights Command :—Headquarters, Roberts' Heights ;
Lieut.-Colonel P. de Waal.

Transvaal Command :—Headquarters, Pretoria ;
Colonel A. H. M. Nussey, C.B.E., D.T.D., D.S.O.

Regimental Alliances.

H.M. the King has approved of the following regimental alliances :—

The Alberta Mounted Rifles, Non-Permanent Active Militia of Canada, to the 3rd The King's Own Hussars ;

8th Princess Louise's New Brunswick Hussars, Non-Permanent Active Militia of Canada, to The Yorkshire Dragoons (Queen's Own) ;

The Winnipeg Grenadiers, Non-Permanent Active Militia of Canada, to the Scots Guards ;

The Edmonton Regiment, Non-Permanent Active Militia of Canada, to The Loyal Regiment (North Lancashire) ;

The Lincoln and Welland Regiment, Non-Permanent Active Militia of Canada, to The Hawkes Bay Regiment New Zealand Military Forces;

The alliance between the New Zealand Army Pay Corps and the Royal Army Pay Corps, the New Zealand Army Pay Corps having ceased to exist as a military unit, is now terminated.

INDIAN ARMY

Major-General A. W. H. M. Moens, C.B., C.M.G., D.S.O., I.A., has been appointed Colonel of the 2nd Battalion (Sikhs) 12th Frontier Force Rifles, in succession to Major-General A. H. Eustace, C.B., C.B.E., D.S.O.

FOREIGN

FRANCE

Army Reorganization.—Further measures to meet the big drop in the numbers of recruits available during the period 1936–40 inclusive have now been decided on.

In order to level out the trough of the "lean year" depression, only $\frac{1}{2}\frac{1}{3}$ths of the total available contingent have been called up this year, while only $\frac{1}{2}\frac{9}{3}$ths are to be called up in 1934. As the total annual contingent only just suffices to enable the present number of units to be maintained, the resulting shortage of men will necessitate the reduction to cadre of fifteen battalions. For this purpose

the regiments belonging to the five divisions stationed in the eight western regions of France have been selected. The infantry of these divisions will then consist of three regiments each of two normal and one cadre battalion of only 2 officers and 15 non-commissioned officers, whose especial function it will be to help train the reservists during their period of training. The whole of the equipment and armament of the disbanded battalions will be kept in the regimental store and will be used by the reservists when called up.

As a partial compensation for this reduction, the numbers of native troops in the *Forces Mobiles* stationed in France are to be increased. The completion of the pacification of Morocco has enabled the troops there to be reduced and three battalions of *Tirailleurs Marocains* are to be transferred to France (one has already arrived). As a result, the two Moroccan regiments in the 1st North African Division will be increased to four battalions each.

The third battalion to be transferred will temporarily remain independent.

As a result of further measures of re-organization :—

(*a*) Two new types of divisional artillery regiments have appeared for mechanized infantry and cavalry divisions respectively :—

(i) *Régiment d'artillerie divisionnaire à tracteurs tous terrains.*—This will apply to the three divisional artillery regiments (belonging to the 12th, 15th and 25th Divisions) which have been motorized this year.

(ii) *Régiment de division de cavalerie à tracteurs tous terrains.*—This will probably finally apply to all five cavalry divisions.

(*b*) The six regiments of *Sapeurs mineurs* have now been divided into three categories, respectively for :—

(i) Fortified regions.

(ii) Frontier regions.

(iii) Interior regions.

The three engineer signal regiments have also been reclassified as above, with a further subdivision of companies into *sapeurs télégraphistes* and *sapeurs radiotélégraphistes.*

The two engineer railway regiments have been divided into "normal" and "special" companies.

Reduction of 5,000 Officers.—As a measure of economy, the Government recently decided on a reduction of 5,000 army officers, and with this end in view offered special inducements to officers to retire prematurely. Some reluctance on the part of eligible officers to avail themselves of the special conditions for retirement became apparent, and the Government had to circularise G.O.C's. Regions requesting them to draw the attention of officers to the facilities offered for their premature retirement. The circular further stated that if the facilities offered do not attract a sufficient number of officers in the time specified, i.e., within six months from the promulgation of the Law of 31st May, 1933, other means will have to be found to bring about the necessary reductions. These measures will be applicable to those officers whose military qualifications are not of a high standard.

Cancellation of Courses of Instruction.—Owing to the fact that expenditure, during the first nine months of the present financial year, has been in excess of the credits allotted, measures have had to be taken to effect corresponding economies before the end of the financial year. These include the cancellation or postponement during the period 1st November to 31st December, of all courses of

instruction except those to be held in the frontier fortification area, as well as of a number of exercises and manœuvres which would normally have taken place.

ITALY

PRE-MILITARY TRAINING.—Under the provisions of a law passed in December, 1930, pre-military training is compulsory for all Italian citizens between the ages of 18 and 21. The complete programme of pre-military training covers two years. The first year course occupies 24 days and the second year course 16 days. At the end of each course an examination is held under instructions issued by the Ministry of War, and those who pass out successfully at the end of the second year become entitled to certain alleviations of their term of conscript service.

A recently published manual gives detailed instructions regarding the training to be carried out. Each day's work normally occupies three hours, of which approximately one hour is devoted to physical training and one hour each to theoretical and practical military instruction. Physical training includes the normal types of exercises, elementary gymnastics, running, jumping, hurdling, climbing and various games. Theoretical military instruction is given in the elements of military organization and duties, special attention being devoted to the inculcation of discipline, obedience and morale. Hygiene, personal cleanliness, food and drink, clothing and exercise receive careful consideration with particular reference to the demands made by long marches. Practical military instruction is limited to close order squad and platoon drill, rifle exercises, and marches up to a maximum of 20 miles in length by the end of the second year course. Musketry is voluntary in places where range accommodation is available, but consists only of two practices on a miniature range followed by the firing of 12 rounds at 100 yards.

Instructions have recently been issued relating to the current second year course and the forthcoming first year course of pre-military training. The current second year course terminates at the end of December, 1933, and final examinations will be held on 15th December. Examining boards are to be appointed by local divisional commanders and will apparently be composed of both Regular Army and Militia officers. The next first year course is to commence on 1st October and will be in progress until March, 1934. It is to be attended by all youths born in 1915 and by those born in 1913 and 1914 who have not yet attended a first year course. Exemption is granted to those who have been members of the "Avanguardisti" or National Militia for two years, but they will be obliged to pass the necessary examination for admission to the next second year course.

Statistics published in the "Milizia Fascista" give figures for the attendance at pre-military courses held during the autumn and winter, 1932–33. A total of over 800,000 attended these courses and, out of approximately 700,000 examined at the conclusion of courses, approximately 650,000 qualified—a result which is stated to be highly satisfactory.

THE MILITIA FOR TERRITORIAL ANTI-AIRCRAFT DEFENCE (D.I.C.A.T.).—The D.I.C.A.T. (Militia for Territorial A.A. defence), which is the new designation of the old D.A.T. (Territorial Air Defence), came into being by Royal Decree in February, 1930, and has been steadily elaborated ever since.

To the D.I.C.A.T. is allotted in peace time the preparation, and in war time the carrying out (in co-operation with the Air Force), of the A.A. defence of the country against hostile air attack. In peace the D.I.C.A.T. is subordinate to the

Ministry of War for training, employment and equipment, and to the General Headquarters of the M.V.S.N. for all questions of recruiting, discipline and administration. In war it will be entirely under the Ministry of War, or supreme command. Expenditure on the D.I.C.A.T. is met from M.V.S.N. funds, with the exception that expenditure on equipment is met by the Ministry of War, or by the Ministry of Marine, in the case of defended places of purely maritime importance.

The D.I.C.A.T. is at present organised into one Inspectorate of D.I.C.A.T. militia, four Inspectorates of higher formations of D.I.C.A.T. militia, with headquarters at Milan, Bologna, Rome and Naples, and 25 regimental commands. The above are permanent cadres. Regimental commands contain batteries, machine gun companies, and observation and listening units in varying numbers. All personnel of the D.I.C.A.T. militia are enrolled from men unfit for service in active arms, superannuated conscript classes or young men of pre-military age.

Inspectorates of the higher formations of D.I.C.A.T. militia, and regimental commands, are subordinate to the command of the Territorial Regular Army Corps in whose district they are stationed, in matters of training, employment and equipment, or at purely naval localities, to the naval commanders. The selection of localities to be defended, allotment of resources, and plans of inter-communication is also the responsibility of the General Staff of the Regular Army Corps concerned. Local Corps Commanders may, after notifying the Inspector-General, D.I.C.A.T. Militia, order experimental alarm raids, etc., to be undertaken, in order to test the readiness and efficiency of the D.I.C.A.T. units.

The D.I.C.A.T. has no duties in connection with anti-aircraft defence of armies in the field. This continues to be the responsibility of the Regular Army.

Institution of Special Badges for *p.s.c.* Officers.—Three special badges have recently been authorized for officers who have passed through the Italian Staff College (*Scuola di guerra*). The badges are made of gold metal, with a blue enamel background and a gold device of the Italian Royal Eagle thereon. These badges are worn immediately above other decorations, or medals. The three different types are for Italian *p.s.c.* officers, for foreign officers who have passed successfully through the Italian Staff college, and for officers who, though not *p.s.c.*, have qualified in General Staff duties in war.

Subsidies to Civilian Transport Suitable for War.—A royal decree has laid down detailed rules for the application of the law of May, 1933, on the subject of subsidised heavy motor transport for military purposes. The object is to encourage manufacturers to build heavy motor transport within certain specifications, and to ensure that owners who subsequently purchase these vehicles maintain them in an efficient condition.

The Ministry of War will publish annually a list of types of vehicles which, by virtue of fulfilling certain specifications, will be eligible for a Warrant of Conformity (*Brevetto di Conformità*). Firms can obtain the inclusion of any of their products in this list by satisfying the Ministry of War that they fulfil specification. Owners of listed vehicles can obtain this warrant from the Army Corps Commander in whose area they reside, subject to their vehicle being in an efficient condition.

The possession of the warrant entitles holders to exemption from " circulation tax " and makes them eligible for a " good maintenance " reward for three years. The amount of this reward varies from Lire 3,500 to Lire 1,000 according to type, and to the state of the vehicle at the time of the annual inspection.

PORTUGAL

ARMY MECHANIZATION.—A decree has recently been submitted providing for the appointment of a " Higher Motorization Commission " attached to the General Staff. It will have the duty of advising on all matters relating to the mechanization and motorization of the army and co-ordinating the proposals of the various army Directorates. In future the Directorates of the different arms and services at the War Ministry will be initially responsible for studying their own requirements in mechanical material, and the system, which has prevailed since March, 1932, of all such study being carried out only by a Commission will be discontinued.

The new Commission will be composed of the Deputy Chief of the General Staff and a number of senior officers representing each arm of the service.

SPAIN

ISSUE OF NEW MORTAR.—The provisional adoption of a new 81-mm. mortar for use as a close support weapon in infantry units has been confirmed. The War Minister has now been authorized to purchase 312 of these mortars and 5,424 shells at a total cost of 1,800,000 pesetas (£87,388 at the present rate of exchange). Although the issue is intended to be on the scale of 2 per battalion in Spain and Morocco, it is probable that in peace only 1 per battalion will be issued to units in Spain, the other being retained in store for use on mobilization.

TURKEY

FORMATION OF A RESERVE OFFICERS SCHOOL.—The old military Lycée at Halicioglu which was closed in 1931 has recently been reopened as a school for reserve officers. This is the first permanent institution of its kind in Turkey. The course of instruction lasts six months, and covers the period in a reserve officer's training between service in the ranks as a non-commissioned officer, and service with a unit as an officer.

The first commandant of the School is Colonel Nuri Bey, formerly Director of Military Intelligence in the General Staff at Ahkara.

AIR NOTES

ROYAL AIR FORCE

Promotions.

The following promotions were made with effect from 1st January, 1934 :—

Air Commodore to be Air Vice-Marshal :—Patrick Henry Lyon Playfair, C.B., M.C.

Group Captains to be Air Commodores :—Lawrence Arthur Pattinson, D.S.O., M.C., D.F.C. ; William Lawrie Welsh, D.S.C., A.F.C. ; John Tremayne Babington, D.S.O.

Appointments.

Air A.D.C's. to the King.—Air Marshal Sir Robert Brooke-Popham, K.C.B., C.M.G., D.S.O., A.F.C., has been appointed Principal Air Aide-de-Camp to the King in succession to Air Chief Marshal Sir Edward Leonard Ellington, K.C.B., C.M.G., C.B.E., Chief of the Air Staff.

Group Captains R. M. Hill, M.C., A.F.C., and T. E. B. Howe, A.F.C., have been appointed Air Aides-de-Camp to the King. Group Captain Hill succeeds Air Commodore L. A. Pattinson, D.S.O., M.C., D.F.C., who relinquished the post on promotion to his present rank on 1st January, 1934. Group Captain Howe's appointment is an additional one.

Air Vice-Marshal :—Reginald Percy Mills, C.B., M.C., A.F.C., to Headquarters, Central Area, as Air Officer Commanding, to date 1st October, 1933.

Air Commodores :—Richard Edmund Charles Peirse, D.S.O., A.F.C., to Headquarters, Palestine and Transjordan, in Command, 21st October, 1933.

Group Captains :—Roger Martin Field, to be Air Attaché, Paris, 15th October, 1933 ; Ivor Guy Vaughan Fowler, A.F.C., to R.A.F. Depot, Middle East, in Command, 18th September, 1933 ; William James Yule Guilfoyle, O.B.E., M.C., to Headquarters, Central Area, as Senior Air Staff Officer, 1st October, 1933 ; Arthur Travers Harris, O.B.E., A.F.C., to Air Ministry, as D.D.O.I. (temporarily), 11th August, 1933 ; Henry John Francis Hunter, M.C., to Headquarters, Fighting Area, as Senior Air Staff Officer, 31st July, 1933 ; Lawrence Arthur Pattinson, D.S.O., M.C., D.F.C., to Air Ministry, as D.O.S.D. (temporarily), 1st October, 1933 ; Sydney William Smith, O.B.E., to R.A.F. Base, Singapore, as Officer Commanding, Far East Command, and to Command R.A.F. Base, Singapore, 10th November, 1933 ; Richard Ernest Saul, D.F.C., to No. 203 (F.B.) Squadron, Basrah, in Command, 26th October, 1933.

Chaplain-in-Chief, Royal Air Force.

The Reverend Sidney Lampard Clarke, M.A., B.Sc., relinquished the appointment of Chaplain-in-Chief and his appointment as Honorary Chaplain to the King with effect from 11th December, and was placed on the retired list as from the same date.

The Reverend James Rowland Walkey, M.A., has been appointed Chaplain-in-Chief, Royal Air Force, and is granted the relative rank of Air Commodore, with effect from 11th December. He has also been appointed an Honorary Chaplain to the King.

Honours and Awards.

The grant of the C.B. (Military Division) to Group Captain R. J. Bone, C.B.E., D.S.O., lately Air Attaché, Paris, was announced in the New Year Honours List.

The King has been graciously pleased to approve of the following awards :—

Air Force Cross.

Flight Lieutenant Oliver Eric Carter.
Flight Lieutenant Leonard Somerville Snaith.
Flying Officer Singleton Powell Richards.

Personnel.

Cranwell.—The passing-out Inspection of Flight Cadets from the Royal Air Force College, Cranwell, was carried out on Friday, 15th December, by Marshal of the Royal Air Force Lord Trenchard, G.C.B., D.S.O.

In his report, the Commandant of the College states that :—

The present strength of the College is 118, and since the formation of the College 677 Flight Cadets have graduated.

Eleven of the Flight Cadets passing out are going to day bomber squadrons, five to fighter, two to Army co-operation, six to flying boats, and three to night bomber squadrons. Flight Cadets who are going to day bombers have been trained on Hart and Atlas types, and those going to fighter squadrons have been trained on Siskin and Bulldog types. In addition, Flight Cadets who are going to fighter squadrons equipped with Fury aircraft have been given a short period on Hart aircraft so as to familiarise them with water-cooled engines. Flight Cadets going to night bomber squadrons have been given a short experience in flying twin-engined aircraft. The standard of flying is good, and the Flight Cadets passing out have averaged 75 hours dual and solo on Service types and 154 hours dual and solo on all types during their course.

The new R.A.F. College building was occupied at the beginning of this term, and all the arrangements have worked satisfactorily. In the new building each Flight Cadet has a separate quarter, and, consequently, facilities for private study are much improved.

"A" Specialists.—With a view to making good an anticipated shortage in senior "A" specialists, it has been decided to pass another five squadron leaders through the "A" course commencing in February, 1934. These will be additional to the normal entry of flying officers into the course.

Central Flying School "Coming-of-Age" Dinner.—A Dinner, presided over by Marshal of the Royal Air Force Lord Trenchard, to celebrate the twenty-first anniversary of the formation of the Central Flying School (at Upavon) in 1912, was held at the Mayfair Hotel, on Friday, 24th November last. Among the guests who attended the Dinner were Lord Londonderry, Secretary of State for Air; Lord Mottistone, who was Secretary for War when the Central Flying School was formed; Air Marshal Sir E. L. Ellington, Chief of the Air Staff; Sir Christopher Bullock, Secretary of the Air Ministry; and Hon. Air Commodore the Right Hon. F. E. Guest, M.P.

Material.

Additions to the "P.P. List."—The Blackburn torpedo, spotter and reconnaissance aeroplane to Specification No. S.15/33, and the Westland general purpose aeroplane to Specification No. G.4/31, have been added to the "P.P. List."

The Blackburn torpedo and reconnaissance aeroplane is a biplane of all-metal monocoque construction with fuel tanks built into the fuselage; interchangeable land or float undercarriage; folding wings; designed to be catapulted when used for spotter reconnaissance work. The crew for the spotter reconnaissance type is three, for the torpedo bomber two. The wing span is 46 ft. Length with land undercarriage is 37 ft., and length with float undercarriage 44 ft. The aircraft may be fitted with either a "Tiger" or "Pegasus" engine.

The Westland general purpose is a two-seater high wing monoplane fitted with "Pegasus" engine. The wings attach directly on to the fuselage and are of thick section, tapering in depth at the centre section to give a good view between pilot and gunner. The undercarriage has a wide track and is of the split axle type. Wheel brakes and tail wheel are fitted.

The Southampton Mark IV is now transferred to the "Open List" and is named "Scapa." This aircraft is a multi-seater flying boat constructed by Supermarine Aviation Works (Vickers), Ltd. The engines fitted are two "Kestrel" III's, developing 525 h.p. each, at the rated altitude of 2,000 ft.

Speed.	*Climb.*
119.5 knots at sea level.	2,000 ft. in 3′ 10″.
124.5 ,, 2,000 ft.	5,000 ft. in 7′ 33″.
123.0 ,, 5,000 ft.	10,000 ft. in 18′ 11″.
117.5 ,, 10,000 ft.	Service ceiling 14,950 ft.

The Handley Page G.4/31 is now also transferred to the "P.P. List," but particulars of this aeroplane are not published.

New Day-and-Night Fighter.—A development order for a new type of single-seater day-and-night fighter has been placed. The aircraft, which is constructed by the Gloster Aircraft Co., Ltd., and is equipped with the Bristol "Mercury" engine, has been officially named the "Gauntlet."

New Engine.—A new engine of the air-cooled radial nine-cylinder type is being introduced into the Service. Manufactured by the Bristol Aeroplane Co. it follows the general lines of the design of existing Service engines of the "Pegasus" series, but is fully supercharged, runs at higher speed and has higher compression ratio and shorter stroke. This engine has been officially named the "Mercury VI S.2," and is intended for use with the new fuel of 87 octane value.

Purchase of Autogiros.—It is understood that orders have been given by the Air Ministry for six autogiros of the new C.30 type. It is proposed to attach one of these aircraft to each of the Army Co-operation Squadrons, and one to the School of Army Co-operation.

Organization.

Formation of Central Area.—With reference to the announcement in last quarter's Air Notes of the formation of the Central Area, R.A.F., with headquarters at Abingdon, the Air Officer Commanding, Central Area, assumed executive control of the regular squadrons in that Area with effect from 16th November last.

The transfer of the Cadre Squadrons from No. 1 Air Defence Group to the Western and Central Areas will be carried out with effect from 23rd January.

MANORBIER LANDING GROUND.—An Air Ministry Order states that Manorbier landing ground is now available for land planes visiting the R.A.F. Station, Pembroke Dock. The landing ground is situated eight miles East of Pembroke Dock near Manorbier Station on the Pembroke-Tenby Railway. Forty-eight hours notice of intended use is to be given to the C.O., Pembroke Dock.

Owing to lack of facilities, visits are not to extend overnight save in exceptional circumstances, and then only with the concurrence of the C.O. Pembroke Dock.

MOVE OF NO. 100 (B) SQUADRON TO SINGAPORE.—No. 100 (Bomber) Squadron moved from Donibristle to Singapore in January, 1934.

R.A.F. DISPLAY, 1934.

The fifteenth Royal Air Force Display will be held at the Royal Air Force Station, Hendon, on Saturday, 30th June, 1934.

FLEET AIR ARM.

NEW AIRCRAFT FOR H.M.S. "GLORIOUS."——H.M.S. "Ark Royal" is shortly proceeding to Malta with new "Baffin" torpedo-bombers for No. 812 Squadron stationed in H.M.S. "Glorious." She will bring back to England the "Ripon" aircraft with which the squadron is at present equipped.

ARMY CO-OPERATION.

Co-operation during recent months has chiefly taken the form of reconnaissances for brigade and divisional exercises of the Aldershot, Southern, and Eastern Commands.

No. 2 (A.C.) Squadron, operating from Friday Wood Aerodrome, took part in 4th Division inter-brigade schemes. No. 4 (A.C.) Squadron took part in exercises of the 5th Infantry, 4th Guards and 1st Cavalry Brigades. No. 13 (A.C.) Squadron in those of the 2nd Infantry and 1st Guards Brigades. No. 26 (A.C.) Squadron co-operated in the inter-brigade exercises of the 5th Division. Nos. 4, 13 and 16 (A.C.) Squadrons co-operated in the Aldershot and Southern Command exercises of the 1st, 2nd and 3rd Divisions. Close, medium, artillery and photographic reconnaissances were carried out.

During the latter exercises two autogiro aircraft were tried out for the first time on inter-communication duties. They were used continuously by divisional commanders and their staffs for visiting and maintaining touch with their subordinate formations, and the experience gained provided useful data as to the suitability of the autogiro for these duties.

No. 4 (A.C.) Squadron co-operated with the 2nd Division during its march from Aldershot to Salisbury Plain, and No. 13 (A.C.) Squadron carried out attacks on this Division on the move. No. 2 (A.C.) Squadron co-operated with the 4th Division in its artillery exercises, and No. 4 (A.C.) Squadron in those of the 2nd Division. No. 16 (A.C.) Squadron took part in shoots with the 4th Medium Brigade, R.A., and with the Army Co-operation Course visit to School of Artillery.

Air experience has been given to a number of officers and men during the exercises. No. 16 (A.C.) Squadron took up 12 N.C.Os. of R.A.S.C., so that they might observe transport concealments. The work of an A.C. squadron has been demonstrated to various Army formations, to students for the Indian Medical Service course, and to officers of the Aldershot Command Intelligence Course. Officers of the Staff College, Camberley, were attached to Nos. 13 and 16 (A.C.) Squadrons during brigade and divisional training.

The Balloon Centre has carried out normal Artillery Co-operation, spending 79 hours in the air. It has also taken part in experiments in sound location of aircraft at Foulness and Rolleston.

OVERSEAS COMMANDS

ADEN.

On 2nd July a party of tribesmen from territory under Imamic control made a foray against two Audhali villages near the foot of the Thirra Pass, in Al Khor —some 100 miles N.E. of Aden. Whilst the fighting was in progress a formation flight of aircraft of No. 8 (Bomber) Squadron, returning from Mukalla to Aden, happened to pass over the scene of the disturbance. The chance appearance of the aircraft produced an immediate cessation of hostilities, the local Zeidi commander, who was under the impression that air assistance had been summoned by W/T, ordering the immediate withdrawal of his tribesmen. On the other hand, Protectorate tribesmen, encouraged by the appearance of our aircraft, immediately concentrated to repel the invaders, a striking example of the effects of air control in undeveloped countries.

Information was received during August that fifty Zeidi troops, with four hundred Yemeni tribesmen, had raided Subeihi territory in the Aden Protectorate, taking a number of prisoners and looting livestock. Further, a British subject who desired to anchor his dhow and land on Protectorate territory was prevented from doing so by threats of force. Some delay ensued in reporting this incident, owing to the remote and isolated position of the district concerned, but the Resident at Aden, who regarded this encroachment as the most serious which had taken place in the Protectorate for many years, sent a strong protest and a demand for full restitution to the Imam's representative at Taiz. A further tax-collecting raid on a smaller scale followed in September. Evasive replies were received in answer to the protest, although assurances were given that restitution would be made. These assurances were not implemented and some of the more important prisoners were retained as hostages. The livestock were returned, but their unfortunate owners were compelled to redeem them from the Zeidis before they were handed over. A further protest was sent by air to the commander at Taiz and the Imam, stating that air action would be taken unless all the hostages were returned and full restitution of all looted property was made by 23rd October. On 20th October a conciliatory reply was received, and it was subsequently reported that our demands had been met in full.

This incident illustrates the value of air power in the most remote and inaccessible districts, and is a further example of the ease with which disturbers of the peace can be warned and, if necessary, punished. It serves to show how the mere threat of air action can nip in the bud troubles which would otherwise persist and increase until a serious situation developed, the solution of which might in the end necessitate severe action and, probably, casualties to both sides.

INTER-COMMAND FLIGHTS.

West African Tour.—The three Vickers Victoria aircraft of No. 216 (Bomber Transport) Squadron, which left Heliopolis on 13th October on a 12,000-mile tour to the West African Colonies, arrived back at Cairo on 18th December, according to schedule. The flight, which was completed without incident, is the ninth flight of over 10,000 miles carried out by the Royal Air Force since 1926, all with Napier-engined aircraft.

Basra to Aden Flight.—The development of the coastal air route between Basra and Aden has been occupying the close attention of the R.A.F. in Iraq and Aden for many years. A large number of reconnaissance flights have been made, and a great deal of work accomplished in exploring the route for suitable landing grounds, flying boat bases and seaplane anchorages. This little-known coast line has presented many natural difficulties to development, and the attitude of the local tribes has not always been one of assistance.

In December, 1931, aircraft from Iraq and Aden Commands met at Murbat, an event which marked the first stage in the linking-up of air facilities on this coast. A further definite stage in the development was marked by the departure of two Rangoon flying boats of No. 203 (F.B.) Squadron from Basra on 30th October for the first through flight connecting up this important route to Aden. The flight covered a distance of over 4,000 miles, and followed the itinerary: Basra—Bahrein—Ras al Khaimah—Khor Jarsma—Murbat—Mukalla—Aden (on 4th November).

On the return journey the flying boats followed a similar route and returned to Basra on 17th November.

Miscellaneous Flights.

Four Wapiti aircraft of No. 55 (B) Squadron left Hinaidi on 30th October on an inter-command flight to Peshawar. The distance covered was 5,400 miles, and the itinerary was as follows:—Hinaidi—Shaibah—Bahrein—Sharjah—Gwadur — Karachi — Jacobadad — Quetta — Kohat — Peshawar — Lahore — Khanpur — Karachi—Gwadur—Sharjah—Bahrein—Shaibah—Hinaidi.

Two Victoria aircraft, fitted with "Pegasus" engines, were flown from England to Iraq during October. Leaving Abingdon on 12th October, they proceeded via Le Bourget—Lyons—Marseilles—Pisa—Naples—Catania—Malta—Heliopolis—Ammam—Rutbah, arriving at Hinaidi on 23rd October.

In November five Victoria aircraft, fitted with "Pegasus" engines, were flown from England to the Middle East, three to Heliopolis and two to Hinaidi. Leaving Lympne on 19th November, the aircraft followed the same route as on the October flight, Heliopolis being reached on 28th November and Hinaidi the following day.

The Iris V flying boat at Malta carried out a cruise of the Eastern Mediterranean, leaving Malta on 29th October, proceeding via Suda Bay—Candia—Syria—Athens —Corfu, returning to Malta on 6th November.

Forthcoming inter-command flights include one from Egypt to the Transvaal, commencing late in February, a second from the N.W. Frontier of India to Singapore, due to begin shortly, and a flight by flying boats from Singapore to Hong Kong, which will not take place before the early summer. The landplane flights will be carried out by composite units of single-engined day bombers and bomber-transport aircraft.

A similar composite unit of four Wapitis and two Victorias left Baghdad on 14th January for a flight to India and Singapore.

(*See also "The Internationalization of Aircraft," p. 154; and "British Air Policy," p. 167.*

FOREIGN

FRANCE.

FLIGHT TO WEST AFRICA.—On 8th November a Service flight of thirty Potez aircraft, commanded by General Vuillemin, left Istres for an extensive tour through West Africa. The objects of the flight are: to give collective training to a number of air force officers, to test the possibility of air communications between France and her African possessions, to test the standard material used in the air force, and to open the way for new air routes through Africa. The route to be followed is as follows: Istres—Carthagena—Rabat—Colomb Bechar—Adrar—Bidon 5—Gao — Segou — Bamako — Tabacounda — Dakar — Kayes — Mopti — Ouagadougou — Niamey — Zinder — Fort Lamy — Ft. Archambault — Bangui — Ft. Archambault — Fort Lamy — Zinder — Niamay — Gao — Bidon 5 — Adrar — El Golea — Touggourt — Tunis — Alger — Oran — Meknes — Carthagena — Istres.

ITALY.

AIR SPEED RECORDS.—In October, 1933, two new air speed records were gained by Italy. The first was the speed record for seaplanes over a 100-kilometre course, when Lieutenant-Colonel Cassinelli, of the Italian High Speed Flight, beat the existing world's record in this class by attaining an average speed of 629.370 k.p.h. (390.838 m.p.h.) over a triangular course near Ancona. The aircraft was a Macchi racing seaplane C.72, fitted with a Fiat A.S.6 engine of 2,400 h.p. This seaplane is of the same type as that which won the world's air speed record for Italy in April, 1933. The dimensions of the course were: 49.354 x 48.618 x 2.048 Km., giving the following angles: 3.38°, 54.39° and 121.43°.

The second of these records was made by Captain Scapinelli on the same seaplane as that described above, when, by maintaining an average speed of over 600 k.p.h. for half an hour, Italy became the first holder of the Bleriot Cup, presented by M. Bleriot to take the place of the Schneider Trophy. Captain Scapinelli maintained a speed of 619.374 k.p.h. (384.8 m.p.h.) for half an hour. This flight also was carried out near Ancona.

AIR MARSHAL ITALO BALBO.—Air Marshal Balbo, who has been the chief figure in Italian aviation since 1926, has been appointed Governor of Libya, whilst Signor Mussolini has re-assumed the post of Minister for Air.

Air Marshal Balbo's recent flight to the United States leading a formation of twenty-four Savoia flying boats, and his successful return flight to Italy was, perhaps, the most ambitious of the mass formation flights he has carried out, and the one which earned him the rank of Air Marshal.

ANTI-AIRCRAFT DEFENCE EXERCISES.—According to reports in the Italian Press, the anti-aircraft exercises carried out last autumn at Milan and the surrounding Provinces were very realistic, and involved the active co-operation of civil organizations and of the public generally.

There was an extensive mobilization of Red Cross units; the Fire Brigade was reinforced and continually on duty; young Fascist groups provided the "casualties"; houses, shops and streets were darkened. Fire and first-aid parties worked in gas masks.

JAPAN.

MANDATED ISLAND AERODROME.—It has been officially announced that it has been decided to construct an aerodrome on the island of Saipan, which is included in the Mandated Group of South Sea Islands, formerly belonging to Germany and now controlled by Japan under League of Nations mandate.

The object of the aerodrome is stated to be in connection with the study of atmospheric conditions, assisting fisheries, and general improvements of communications.

SPECIAL TRAINING FOR RESERVISTS.—Approximately 100,000 officers, N.C.Os. and men of the Army Reserve are to be called up for special training this year. They will join units in small groups at several times, and will receive training in aircraft duties, air defence, anti-gas measures, use of tanks. Facilities will also be available for officers and W.Os. now on the reserve to rejoin the Colours.

TRAINING OF BOY AIRMEN.—Boys are to be enlisted at the Tokorozawa Army Air Service School for training as aircraftmen and pilots. The annual intake is to provide sixty pilots who will receive two years training and a hundred aircraftmen whose training will extend to three years.

SOVIET UNION.

FRENCH AIR MINISTER'S VISIT.—In September M. Cot paid a visit to Moscow; he was accompanied by the Inspector-General of the Air Force and a staff of technical and civil aviation experts. The mission proceeded by air in three of the latest types of French commercial aircraft. The main object of the mission was stated to be to improve the commercial relations between French and Russian aviation; but there seems little doubt that politically the flight fitted in well with M. Herriot's campaign on behalf of closer relations between the two countries.

M. Pierre Cot refused to give any interview on his visit to Russia, but one of the French Air Ministry officials who accompanied him supplied the following information. The arrival in Moscow was impressive. Soviet aeroplanes came to meet the ministerial machine, and carried out evolutions around it. There is a fine aerodrome, with large concrete hangars. The landing ground is in a perpetual state of change, being enlarged, drained, buildings put up and demolished, and access to it is prevented by barbed wire. Only pilots and travellers are allowed on the aerodrome. The French Air Minister was struck by the youth and enthusiasm of the Soviet pilots. They are all under forty. The authorities have made a clean sweep of the veterans, to make room for youth. A Vuillemin, Pivolo (Pelletier d'Oisy) or Bossoutrot would have no chance in Russia. The Russian machines are good and up to date, but their engines are not entirely satisfactory. Realising this, Russia has acquired Hispano-Suiza and Jupiter licences for construction in series.

The Russians have impressive four-engined machines, which would be extremely useful in the event of war. Their aerial combat technique is quite up to the standard of the rest of Europe. Strict discipline prevails in camps and schools.

It is an honour to be a pilot, and confers great privileges. Military and civil airmen are very well clothed. In short, the Russian Air Force resembles many others in the world.

The Deruluft, a commercial air transport company, is creating numerous new lines. True, the Russians are not yet as air-minded as the Germans or Americans, but the party officials and foreigners (engineers, professors, experts) working in the Soviet are setting them a good example by travelling by air on all occasions. The Germans have sold a fair number of Dornier and Junkers machines to Russia.

Whatever some people may think, the visit will prove to have been far from useless. There is a considerable opening for the French aircraft industry in the U.S.S.R. Up to the present, the Germans alone have profited by it. Aerodromes, bases, and factories were all designed or constructed under the direction of German engineers, and the pilots were trained by German instructors. But a new attitude is now beginning to appear in Moscow, owing to the political, and consequently economic, tension between Hitler and the Soviet. This would appear to provide an opportunity for the French aircraft, and aero-engine factories which are at present working on short time.

Purchase of Italian Flying Boats.—According to the Italian Press, the Soviet Government has purchased from Italy five Savoia S.55 X flying boats, being the type used by the Italians in their recent transatlantic flight. The first of these aircraft has been delivered by air.

UNITED STATES.

Expansion of Air Services.

An allotment of $15,000,000 (£3,000,000 approximately) has recently been made from the National Industrial Recovery Funds to be equally divided between the War and Navy Departments for the purchase of new aircraft. The amount is said to be only a small part of the total asked, but supporters of a larger air force are certain that the first allocation is the forerunner of other awards soon to follow. Sponsors of the air programme have asked for as much as $30,000,000 (£6,000,000 approximately) for the Army alone. President Roosevelt is keenly interested in the proposal, and has indicated his willingness to approve the ultimate expenditure of that amount.

The Army Air Corps is expected to use the funds available for replacing present equipment with aircraft of more modern type. The award had been withheld pending, it was stated, the results of the Disarmament Conference. The general opinion in America is that the Conference has failed and the funds held over have now, therefore, been supplied.

The Naval Air Service requires over a hundred aircraft to equip the new aircraft carrier "Ranger," which is due for completion in March, 1934, and previous to the present award there were no funds available for the provision of aircraft for this vessel.

It is not clear for what purpose the United States require huge air forces, over and above sea-borne aircraft. Neither Mexico nor Canada appear to constitute any serious air danger.

REVIEWS OF BOOKS

GENERAL

Lord Riddell's Intimate Diary of the Peace Conference and After. (Gollanz). 18s. od.

Since this Diary runs from November, 1918, to November, 1923, it covers those years which future historians may well rank as among the most important of our age.

As chief British press representative at the making of the Peace Treaties and at various of the Conferences which followed, Lord Riddell was an able interpreter of Mr. Lloyd George's actions and, it may be added, of his interests also. His book thus largely consists of conversations between himself and the then Prime Minister, and highly entertaining they are. For, apart from politics and policies, the talk ranged over a wide diversity of subjects in the course of which a good deal of light is thrown on the characters of both participants.

Now, whatever the defects of Mr. Lloyd George—and he has had plenty of enemies to point them out—it can never be said that he is uninteresting. Here he is revealed in his strength and his weakness—energy, faith in Britain, and some glimmerings of vision on the one hand, and on the other, opportunism, trust in *flair* rather than in knowledge, and the use of dubious channels and methods. While Lord Riddell can, on the whole, be acquitted of sycophancy, he surely forgets himself when he includes the Premier—and that in an official telegram sent to the German Government—under the nomenclature "heads of States" (p. 56), and again when he solemnly addresses him as the "Prime Minister of the British Empire" (p.p. 288-89). Nor is it merely captious to draw attention to certain inaccuracies of statement. For instance, there is no Hotel du Forêt at Fontainebleau (p. 66); nor is there a Dutch Ambassador in London (p. 114).

What perhaps will most strike the ordinary reader as he is whirled about Europe among statesmen and their satellites, is the faith which these latter repose in the spoken word. Lord Riddell almost exhausts the resources of the language in finding adjectives with which to qualify their public utterances. There are "effective," "touching," "first class," "important," "great," "excellent" and "wonderful" speeches. Mr. Lloyd George even contends that all great men of action have been great talkers. The conclusion is doubtful, but in any case even if it could be sustained, it would remain that they became great talkers subsequent to becoming great men of action. Napoleon, for example, talked at St. Helena because he had nothing better to do.

It is indeed difficult to escape the fact that those engaged in the practice of politics have no small conceit of themselves and their works. In this respect they differ perhaps but little from those engaged in other callings. Yet there is this difference in the justification thereof. In most professions an adequate mastery is within the realm of practical achievement. But politicians can never acquire the science of government because their is no such science.

Laying down this book, then, we are irresistibly reminded of the saying attributed to Oxenstiern when he had completed the instruction of his son to succeed him as Chancellor of Sweden, "and now you see my son with how little wisdom the kingdoms of the world are governed."

Samuel Pepys. By Arthur Bryant. (Cambridge University Press). 10s. 6d.

The first volume of Mr. Bryant's eagerly awaited biography carries us to the death of Pepys's wife in November, 1669, shortly following the abandonment of his diary. Mr. Bryant's work has much to commend it. Firstly, it is the fullest life of Pepys (so far as it goes) yet published. Secondly, it presents us with the whole man—not merely the licentious puritan, but the brilliant and painstaking man of business— though some will think Mr. Bryant has given a bias to the former aspect by discussing Pepys's less creditable activities at unnecessary length, and without sufficiently relating them to contemporary morals. Thirdly, it is singularly free from errors of fact, and such minor ones as may be discovered (e.g., Van Tromp for Tromp, and Robin, for Robert, Holmes) are not intimately connected with the main theme. In this connection, however, Mr. Bryant is on doubtful ground when he insists that Pepys wrote his diary in shorthand to preserve secrecy; Mr. Chappel in his *Secrecy of the Diary*—a paper read before the Pepys Club—has shown good reason for the contrary view. Fourthly, the book is written in a vivacious style that only occasionally gives way to a sententiousness that appears to compare the *Diary* with the *Iliad*, and tells us that Elizabeth and Samuel were not blessed with children—"those interpreters of married life," whatever that may mean.

In short, Mr. Bryant has produced a most readable and scholarly volume. Whether or not it can fulfill the claim to be the definitive life of Pepys, it is too soon to judge. The *Diary* itself will always be the definitive life for the years it covers, however brilliantly it may be paraphrased, and Mr. Bryant, moreover, sometimes gives the impression that he is skating on thin ice when he deals with the activities of the Navy Board. Where the administration of the Royal Navy is concerned, however, the harder half of his task lies before him, and we must await its completion before definitely awarding his book this overworked epithet.

Silk Hat and Spurs. By Rafael de Nogales. (Wright & Brown). 18s. 0d.

The author, a Venezuelan by birth and Spaniard by education, has had an adventurous and varied career, which he recounts in this book. After some astonishing experiences in the valley of the River Orinoco, when raiding the gold mining area, he took part in some revolutionary guerilla operations in which he was wounded. Next he particpated in some filibustering expeditions in Central America. These stories are all rather in the vein of another Captain Kettle. But it is to the last pages of the book that the military reader will turn, and he will not be disappointed for he will find some highly entertaining tales of cavalry raids on the British communications at El Arish, and of some attempts to blow up the British pipe line before the first battle of Gaza in 1916. These adventures are all supplementary to the same author's more complete book on the Palestine Campaign.

Lord Allenby has contributed a foreword to this volume.

NAVAL

Brassey's Naval and Shipping Annual. Edited by Commander C. N. Robinson, R.N., and H. M. Ross. (William Clowes & Sons, Ltd.). 25s. 0d.

It is no fault of the editors that both the naval and mercantile sections of the latest volume of Brassey's Annual make depressing reading; indeed, they will have done a great patriotic service if they succeed in drawing attention to a state

of affairs which threatens to undermine the whole structure of the Empire and the very safety and welfare of the British people. The Annual should be all the more effective in this respect, because, it does not set out to create alarm; it merely states facts which should speak for themselves and cause profound anxiety to every thinking reader.

The first two chapters—one on the British and the other on foreign navies—both emphasize that the Naval Agreements, to which we have been committed by political idealism, far from making peace more secure, have shaken its true foundations to their core. The greatest influence for peace since the time of Trafalgar has been the Navy, but "the sole results of the Washington and London Treaties, and the prolonged Disarmament Conference, have been to cripple the Navy and to impel every other Power . . . except Germany, to build as they have never built before."

The cruiser situation can only be described as pitiful. It is graphically summarised in the chapter on Comparative Naval Strength which states that "at any time during the next three years . . . this country cannot put into service more than thirty-one to thirty-five cruisers within the age limit of sixteen years." Of what use is it to clamour for 5,000 aeroplanes when we have not got enough cruisers to ensure that they will be supplied with sufficient petrol to keep in the air, much less to prevent the people of this island being starved into submission within a few weeks of the outbreak of hostilities.

Bad as the position is, it is made worse when we are reminded that "the men who built the war fleet are twenty years older, and the entry of apprentices has been only one-tenth of what it was in the decade before the war."

It is a matter of history, that whenever we have neglected our Navy, our Merchant Marine has also suffered. Again and again the nation and its political leaders have had to learn by bitter experience that, if we fail to maintain our sea supremacy in every shape and form, there is bound to come a day of reckoning, and always we have to pay dearly, whether in blood or treasure or both, for our recovery.

Chapter and verse for all these weighty considerations are to be found in this Annual, which, year by year, brings to every Englishman who will read it a faithful account and record of his heritage. The more professional student will also find a wealth of valuable information on the latest developments of ship construction, machinery and marine aviation which, together with the meticulously prepared tables, make the latest edition of "Brassey" an indispensable addition to the bookshelf.

Jane's Fighting Ships, 1933. Edited by Dr. Oscar Parkes, O.B.E. (Sampson Low, Marston & Co.). £2 2s. 0d.

Those who will not trouble to read facts may sometimes be convinced of them by pictures; the outstanding fact portrayed in the latest edition of Jane's Fighting Ships is the serious weakness of British cruiser strength. One has only to glance at the photographs representing a dozen or more over-age ships of the "C" class, which form nearly twenty-five per cent. of our present cruiser force, and then turn to the ships they might have to fight, as shown in the foreign sections, to realize the very grave danger in which we stand. Nor is the position more reassuring when we study the latest replacements in this class of warship. The little "Arethusas," with only six 6-inch guns, and even the "Amphions" and "Leanders," with two more guns but very poor armour, do not inspire confidence when we compare them with "La Galissonière" class with their nine

6.1-inch guns, 3–4-inch belts, and 5½-inch turret armour; or the latest designs for Japanese and United States "category (*b*)" cruisers which, it is understood, will carry fifteen 6-inch guns. The announcement that we are to build two 9,000-ton ships is clear proof that we have made a serious mistake in believing that if we built small and weak vessels other Powers would do the same; but why must the First Lord almost apologise for this belated act of self-defence—rather should he have deplored the policy, for which he was not responsible, that has placed us in this ignominious position.

A study of the flotilla leader and destroyer situation is equally depressing. Tied down by the London Treaty, we are still building vessels of 1,400 tons, armed with only four 4.7 guns and with a designed speed of about 35 knots, whereas France now has—built or completing—an array of torpedo craft of 1,000 tons more displacement, carrying five 5.5-inch guns, and capable of speeds in the neighbourhood of 40 knots; Italy has armed her latest leaders with six 4.7's and given them a speed of 38 knots; the Japanese destroyers are armed with six 5.1-inch guns and nine 21-inch tubes—as compared to our destroyers eight; while the new United States leaders will displace 1,800 to 1,900 tons and the destroyers 1,500 tons, and carry an armament of at least five 5-inch guns, as well as their full complement of torpedo tubes.

All these disturbing defects in our naval construction programmes of late years, and much else of importance are graphically shown for those who will take the pains to make full use of this invaluable annual. The very large number of new blocks and general overhauling and improvement of the letterpress make this, the latest, edition of "Fighting Ships" even more attractive than its predecessors.

Mediterranean Medley. By Captain Lionel Dawson, R.N. (Rich & Cowan Ltd., London). **15s.**

The author of "Flotillas: A Hard Lying Story" has written another very readable book of reminiscences. It deals with international and naval events in and around the Mediterranean immediately after the War. We follow him through his personal adventures and associations with a dozen different nationalities; through the mess of corruption, opportunism, and bolshevism of decaying Russia; the truculence of the Turks—because they had dodged the Versailles Treaty and nobody wanted to start another war; the intrigues in the Adriatic; the making of an "independent" Egypt; and even an outburst of "nationalism" by the dregs of Malta. Such were some of the immediate effects of peace and the theory of "self-determination"; such, too, was the hot-bed in which the delicate roots of the League of Nations were planted.

Amidst all, was the steadying, succouring, and pacifying influence of British arms and British officers—the latter often bearing responsibilities out of all proportion to their age, rank, and material resources—"Subaltern officers . . . were to be discovered in the most inaccessible portions of Anatolia and Russia performing the duties of diplomats, organizers and rulers with the accustomed aplomb of their breed, and unmoved by lack of orders or policy . . . It was a paradise for the naval officer, whatever his rank, who, fortunate enough to have a command of his own, did not fear responsibility . . ."

Captain Dawson's second book deepens the impression left by his previous one that both the country and the Services would gain immeasurably if far more opportunities were given to young officers in peace time to exercise independent command and find scope for initiative. Over-organization, both in work and play,

is fatal to those qualities of resource and enterprise which are always being preached in theory and yet are so often discouraged in practice. It is something to know that " small ship " commands are now regarded as good service for promotion, instead of charity jobs for those who have been passed over. But anyone who will read such valuable records as these and similar works, describing the most truly active naval work in and directly after the War, cannot fail to appreciate that no officer should be considered fit for higher rank who has not shown his merit in an independent command, however small.

The Conway. By John Masefield. (William Heinemann, Ltd.). 10s. 6d.

The opinion is sometimes expressed that a sea training affords a good beginning for any profession. Mr. John Masefield, the poet laureate, has stated that the life of the sea was one of the best schools for story writers. On one occasion he referred to the sailors among whom he passed his younger years as being " story tellers, almost to a man ! "

In his book, "The Conway," he relates some amusing and interesting anecdotes of these sailors. He has obtained letters and extracts from diaries from all the old " Conway " boys with whom he could get into touch ; to these he has added his own practical experience gained during the time he was himself a cadet in the ship, from 1891 to 1894. These extracts, dating from 1859, the year in which the Mercantile Marine School Ship was inaugurated, form a most complete and descriptive record of life on board, and the progress of the training ship during nearly three-quarters of a century. Over 6,000 cadets have been trained in this time, the large majority becoming officers in the Merchant Service. A limited number have, however, passed into the Royal Navy and Royal Indian Marine. In such a company of youngsters, ranging from 13 to 16 years of age, many a lively escapade is to be found, among which are some tales of gallantry and devotion to duty that show what the boys are made of, as well as proving the efficiency of the training which they receive. Although sail training has disappeared from the Sea Services of this country, the traditions imparted by this old wooden ship, the drill aloft, and the boat work carried out in the strong tides of the Mersey, offer facilities for training which no shore establishment can ever do.

There are some delightful pen studies of the " Conway " worthies : officers, masters and instructors. In conclusion, notes are added on Naval Cadetships and direct entry into the Royal Navy. Lists of Cadets who have passed into the Navy and Indian Marine, and the Roll of Honour are also included. The book is well illustrated, and will be of particular interest to old " Conways," and to those who wish to become acquainted with the details of the Merchant Service Training.

Naval Ballads and Sea Songs. Selected and Illustrated by Cecil C. P. Lawson. (Peter Davies). 12s. 6d.

This is a delightful collection of the lyrics of old-time naval ditties in very appropriate settings. Both words and sketches owe their origin in many cases to the collection of Commander C. N. Robinson who provides an introduction. As he reminds us, the ballad of the " Distressed Men-of-War " recalls another post-war period when ships were laid up and large numbers of officers and men were turned loose—but with the difference that there were no pensions in those times, and many were literally faced with starvation. " The Russians won't come out," from " The War Song Book " of 1855,—railing at the determination of the enemy fleet to remain in harbour is another reminder that history is wont to repeat itself.

But whether it be loyal sentiments, great victories, famous Admirals, or the delights and adventures of a sailor's life, all these verses breathe the spirit of the Navy in those spacious days when "long time of the sea had Old England been Queen."

Ruhmestage der Deutschen Marine. By Kapitänleutnant Norbert von Baumbach. (Verlagsbuchhandlung Broschek & Co., Hamburg). 6s. od.

This little work is largely devoted to an interesting collection of photographs of the German navy— a few relating to its early history, but the majority to the Great War. Particularly striking are those showing the damage to the ships which were hit in the battles of Dogger Bank and Jutland, or which struck our mines or were hit by our torpedoes; these do not give the impression that our weapons were so defective as has sometimes been alleged. The pictures of the blockships at Zeebrugge, the huge turrets of the Heligoland defences, and the sinking of the German fleet at Scapa are also good.

MILITARY

With the Guards we shall go: A Guardsman's Letters in the Crimea, 1854-1855. By Mabell, Countess of Airlie. (Hodder & Stoughton). 15s. od.

The Countess of Airlie has presented her readers with a remarkable picture of the Crimean War—all told in a fashion that should appeal strongly to the regimental soldier since the narrative is based on a complete series of letters written by Captain Strange Jocelyn to his father, Lord Roden, throughout the campaign. But there is far more in the book than the letters themselves, for only such parts of these are reproduced as would be of interest to the public. In between the letters are interspersed pages dealing with those aspects of the war which the correspondence does not touch. The resultant narrative is not only instructive and readable but is animated by human feeling of a high order. Seldom have we read of the sufferings and patience of the British troops in the Crimea in more telling pages; and what a fine figure of a regimental officer Strange Jocelyn appears to have been. It is indeed a story which should be read by every young infantry officer.

There is still more in the book than mere history. The whole strategy of the campaign comes to light in the Countess' own narrative; and a miserable bungle it is made to appear! In addition, she brings out clearly the weakness of the French commanders, first the dying St. Arnaud, then the timid Canrobert; next, when the fiery Pélissier assumed the high command, she tells how he was baulked by the ambition of Napoleon III to come out and lead the troops in person to the final victory. It is strange how, sixty years earlier, the Allies experienced the same difficulties as they did during the Great War. It is still more curious that we should not have profited by the failures of the Crimea more than we did when embarking on the venture of 1914. Yet, if we are horrified by the shortcomings of 1854, it may be that we forget the many disgraceful defects in our military machine in still earlier campaigns; many of the West Indian expeditions and the Walcheren expedition of 1794 were probably far more seriously mismanaged than the Crimea. It was the arrival of the Press in the shape of *The Times* correspondent and the first use of the electric telegraph that made public a state of affairs which may well have been chronic in the past, except during the brighter interval of the Peninsular War.

The book is unfortunately marred by far too many typographical errors; names are frequently misspelt; French words wrongly accented, and names of places misspelt, e.g., Galata is repeatedly spelt Galatea. In addition, a map would greatly have assisted the reader, even had it come only as an end-paper.

The Battle of Le Cateau: 26th August, 1914. Tour of the Battlefield. Official. (H.M's Stationery Office). 2s. od.

This is an official pamphlet issued for the convenience of British officers visiting this battlefield. It is 36 pages in length, and is well provided with maps and panorama sketches. It is based entirely on the Official History, but has additional notes, lessons of the battle, etc., and should prove a valuable guide.

Four Score Years and Ten: Sir Bindon Blood's Reminiscences. By General Sir Bindon Blood, G.C.B., G.C.V.O. (G. Bell & Sons). 16s. od.

In the course of his long service in India, Sir Bindon Blood took part in much frontier fighting, and was responsible for, or participated in, many salutary changes in the organization and training of the Indian Engineer Services, while—last but not least—few British officers have enjoyed such opportunities for indulgence in so much sport, from pig-sticking and tiger-shooting downwards. It is not surprising, therefore, that General Blood should have found ample scope for the compilation of some interesting and entertaining memoirs. After serving a short time at home he first went to India in 1871, and was for some years chiefly occupied in bridging work; but going to that delectable station, Roorkee, pig-sticking seems to have attracted him more than any other form of activity, and some of his tales of these pig-sticking days assuredly rank with some of the best we have met. Some years later Sir Bindon's long record of small wars opened with the Zulu Campaign of 1878-79, about which he has a few pungent remarks to offer in regard to the mismanagement of the war and to the death of the Prince Imperial. Next, he took part in the Afghanistan operations although he enjoyed little scope there for rendering any outstanding service. Then followed the Chitral Relief expedition; the notable episodes of this campaign were the crossing of the Malakand Pass and of the Swat River, and the final bridging of the Panjkora River. The latter work was carried out by Major Fenton Aylmer, V.C., R.E., in brilliant fashion. Two years later Sir Bindon received command of the Malakand Field Force, and directed the successful forcing of the Swat defile, while, in the following winter (January, 1895) he conducted the operations against the Bunerwals, during which the well-known Ambela Pass was crossed. In January, 1901, he was ordered to South Africa, where he commanded the troops in the Eastern Transvaal, but it was probably not a very congenial task to so active a mind. Sir Bindon was back in India in October, 1901, where he held the Punjab command for five years; after that he retired.

It is a remarkably naive tale that General Blood has presented to his readers; at times it seems a trifle egotistic and might perhaps be improved by a little artistry with the pen; but the sincerity of the recital and the delightful anecdotes with which it is interlarded enlist the reader's sympathy from the outset while they offer a picture of a very fine type of British officer of that attractive epoch of small wars.

The Military Engineer in India. By Lieut.-Colonel E. W. C. Sandes, D.S.O., M.C., R.E. (Ret.). Vol. I. (R.E. Institution). 25s. od.

The role of the military engineer in India has always extended far beyond our more limited conception of what military engineering normally is at home. From

the very earliest days of the East India Company all the depots, storehouses and establishments of the Company were built with a view to defence, while at Bombay, Madras and Calcutta these earlier works developed into powerful forts. It is true that the first Fort William at Calcutta was not well planned, and that these defects led to its fall in 1756, but these failings were not the fault of the Company's engineers.

It was not until 1775 that the engineer became a combatant officer, while the whole Engineer Corps was then reorganized. From that time onwards the Indian Engineers played a brilliant part in all the military operations that took place in India; and Indian campaigns have always proved a fruitful field for engineer works and exploits; one need but allude to the feats performed by the sappers during the Mutiny, in particular at the blowing in of the Kashmir Gate at Delhi on 14th September, 1856. This incident is deservedly related at some length by Colonel Sandes. It was not until 1862 that the Indian Engineer units were assimilated to the Royal Engineers.

In addition to relating the part played by the sappers in all the frontier wars since that date, the author has given a full account of their participation in the Great War in Flanders, 1914-15. The reorganization of the Indian Sappers and Miners in 1932 brings the volume to a close.

Having access to all official records, Colonel Sandes was faced with a wealth of material which has been well employed. But the subject was still so great that a second volume, which will deal with the work of the Engineers in purely civil tasks, such as irrigation, roads, railways and survey, will be necessary to complete the history. The author has been assisted by numerous officers and authorities in possession of special information concerning engineer work in India, and his narrative, which is couched in a plain straightforward language, carries conviction on every page; being written from a broad standpoint, it is in fact a serious and valuable contribution to the history of British arms in India.

La Compagne de L'Irak, 1914-1918; Le Siège de Kut-El-Amara. By Commandant M. Moukbil Bey. (Paris: Berger Levrault, 1933). 20 Fcs.

The author explains in his introduction that his reason for writing this book lay in a desire to do some justice to the part played by the Turkish army in this remote theatre of the World War. That their erstwhile opponents need no such reminder is shown in our Official History and in numerous other books emanating from British sources. The first part of the book consists of a summary account of the operations in Iraq from November, 1914, to November, 1918. The second part is a more detailed account of the siege of Kut-el-Amara and the operations against the British relief forces which the author claims, with some justice, to be one of the most glorious episodes in the military history of his country. There are twenty-nine sketches and maps.

The author served on the staff of the Turkish VIth Army, and his narrative is based on his own notes and on those of various Turkish officers who served in the campaign. He gives a bibliography which, unfortunately, does not include the British Official History. As it is he has allowed some unnecessary errors to creep into his book. To mention only two, he gives the impression that the actual fighting in the operation that we knew as "Townshend's Regatta," in June, 1915, which put the 6th Division in possession of Amara, took place around that town, whereas, in fact, it occurred at Ratta, only a few miles north of Kurna. Again, the reason for the delay in Kemball's attack on the Dujailah redoubt on 8th March, 1916, lay, not in the late arrival of the British artillery, which marched all night

over the desert in a closed column with the infantry and, consequently, arrived at its destination simultaneously with the latter (the writer was Captain of one of the batteries in Kemball's column and has a vivid recollection of the discomforts of that night march). The real reason lay in the rigid instructions issued in advance for the co-ordination of the attack of Kemball's and Keary's columns, which Kemball did not consider himself justified in disregarding in order to seize a golden but fleeting opportunity.

One could multiply these examples, but the author disarms the criticism of the British reader by admitting that he is compiling his account primarily from Turkish sources and that all the Turkish records were captured in the course of the operations in 1918. The main interest of the book lies in the account of the appalling difficulties encountered by the Turks operating in Iraq, with their base at Constantinople. The length of our communications caused us innumerable difficulties, but these were mere child's play compared to those with which the Turk had to compete. Another point of great interest lies in the attitude of the author, a Turkish officer and, presumably, not an untypical one, to the doings of the German missions in Persia and Afghanistan and, indeed, to the whole policy of the war in the East, as laid down by the German General Staff. From the point of view of the grand strategy of the Central Powers, this was eminently successful. It was due to our nervousness for India, evoked by the presence of these missions, that we were led into employing such wholly disproportionate forces in this remote theatre of war. But Commandant Moukbil Bey can only see how the dispersion of the Turkish forces, that this policy occasioned, led to their military defeat, the loss of Turkish provinces and the sacrifice of Turkish interests. Germany was fortunate in her ally—the latter considerably less so.

Prelude to Hitler. By Major B. T. Reynolds, M.C., R.A. (Ret.). (Jonathan Cape). 7s. 6d.

Written in an autobiographical manner, this book describes the author's career in the Army of Occupation, first at Cologne then at Wiesbaden, from December, 1918, until his retirement from the Army at the end of 1927. During that period he came much into contact with both Germans and French; indeed, he had the remarkable experience of being attached as British representative to French Headquarters during the occupation of the Ruhr. He thus enjoyed an unique opportunity of studying both conditions in Germany and Franco-German post-War relations. It is these two subjects which form the backbone of the book.

Then, in 1928, Major Reynolds went into business and found himself back in Germany as the representative of a British industrial firm on the board of a German manufactory. This proved a further opportunity for improving his acquaintance with Germany and Germans. Unfortunately the financial crash of 1929 brought Major Reynolds home, and terminated his business career.

Out of this material he has put together a highly readable volume; his criticisms of Army life and of the Army as a profession are entertaining, while reading true to life. In addition, his views on business life and ethics should be read by all soldiers who are themselves thinking of leaving the Army for a commercial career. It is, however, as a serious contribution to the study of Hitlerite Germany that the book should be viewed. In this respect it is full of interest since it is packed with sidelights on German thought and character which explain much of what has recently happened. But the book is neither solid history nor does it claim to be high-falutin' literature; it is a plain straightforward tale of the personal experiences of an observant soldier; as such it is well worth perusal.

A Practical Digest of Military Law. By Captain R. Townshend Stephens. (Sifton Praed). 8s. 6d.

Many books have been produced to assist officers to understand the mysteries of Military Law; several of these have been excellent in so far as they go; as many more have been designed solely to help the student to pass an examination in this subject. Captain Townshend Stephens has in this digest gone further and has produced a manual of close on 230 tightly packed pages, which sets out to be explanatory of the entire manual of Military Law. In spite of the quantity of the matter, the arrangement is good and logical, while ample marginal notes and a clear index seem to render its use pretty simple.

Field-Marshal Sir Claud Jacob in his foreword to the volume considers that it fulfils all requirements and strongly recommends it to all officers.

The Staff College Examination Lecture Series. By Brevet Lieut.-Colonel B. C. Dening, M.C., R.E. (Civil and Military Gazette Press). 8s. 6d.

This volume consists of a synopsis of thirty-seven lectures, beginning with two lectures on the nature of the preparation necessary to sit for the Staff College examination. It then offers a number of lectures on all the more important subjects. of the examination. The matter is of necessity highly condensed, but is well up to date. Nevertheless, the book can only be regarded as a concentrated guide on how to read for this examination with a few general hints on all the more important subjects. Its chief value resides in the general survey which it offers to the wide scope of the examination.

A Study of Unit Administration. Anonymous. (Gale & Polden). 6s. 6d.

This little guide to the administration of a military unit is arranged on a novel plan. Starting from the assumption that much crime and lack of efficiency arises from faulty administration, the author (or authors) show how the messing, the fuel and clothing policy of a unit should be managed to obtain the best results therefrom. Much importance is laid on the adoption of a clear policy to be followed throughout the year so as to obtain the greatest well-being of the troops. Great stress is placed on the use of graphs. The book should prove helpful to commanders of all units.

Lighter Episodes in the Life of a Prisoner of War. By Major T. V. Scudamore, V.D., F.R.G.S., The British Columbia Regiment. (Gale & Polden). 6s. od.

The writer of this little book was taken prisoner, after being wounded, at the second battle of Ypres. He spent over two years as a prisoner in Germany, after which he was transferred to an internment camp in Switzerland. The book does not add any actual fresh information as to what we know of prisoners' camps in Germany, but it is so delightfully written and contains so many humorous touches concerning prisoners of war of all nationalities, and still more regarding their German guards that it can be strongly recommended to all military readers; the brevity of the little work may be a further inducement to take it up.

REGIMENTAL HISTORIES

A Short History of the Royal Scots Fusiliers. (Gale & Polden).

This is a short history of the Royal Scots Fusiliers for the use of recruits and others requiring a brief account of the Regiment. The greater portion deals with the achievements of the Fusiliers in the Great War; but this is preceded by some concise notes explanatory of the raising of the Regiment, its battle-honours,

badges and the like; also some references to its Volunteer, Territorial and Service battalions.

The First Birmingham Battalion in the Great War, 1914-1919: the 14th (Service) Battalion of the Royal Warwickshire Regiment. By J. E. B. Fairclough. (Cornish Brothers, Birmingham). 6s. 6d.

This Birmingham battalion was raised in October, 1914, being the response of the City of Birmingham to Kitchener's call for his new armies. It left for France in November, 1915, and joined the 5th Division. It fought on the Somme in 1916 and at Vimy in 1917. During the following winter it spent four months on the Italian front. On returning to France it fought in the Forêt de Nieppe, then at Bapaume, and ended the War at Gouzeaucourt. The history is written from a slightly popular standpoint, but is none the less quite well done and readable; it is plentifully illustrated with photographs.

The Poona Horse (17th Queen Victoria's Own Cavalry), 1817-1931. Two Volumes.

Vol. I.—Part I. By Major M. H. Anderson, and Lieut.-Colonel B. J. Anderson. Part II. By Colonel G. M. Molloy, O.B.E.

Vol. II.—By Colonel H. C. Wylly, C.B.

(Royal United Service Institution.) 21s.

Two regiments were amalgamated into the present Poona Horse in 1921: the 33rd (Queen Victoria's Own) Light Cavalry and the 34th (Prince Albert Victor's Own) Poona Horse. The new regiment received the title which stands at the head of this history. The 33rd was raised in 1820, being known until 1911 by variants of the title of 3rd Regiment of Light Cavalry. The 34th was raised in 1817 and has been known under several names, all of them being connected with Poona. It was a happy thought to unite these two regiments which, apart from having had much in common, have both played a distinguished part in nearly every Indian campaign since their creation. During the Great War the 34th were brought to France with the Indian Cavalry; then in 1918 they were despatched to Palestine, where they fought until the Armistice. The 33rd was sent to Mesopotamia in 1914, and returned to India in 1916; it then took part in the Third Afghan War of 1919.

The two volumes are well produced, and contain several photographs and maps, good appendixes and indexes.

Outram's Rifles: A History of the 4th Battalion, 6th Rajputana Rifles. By H. G. Rawlinson, C.I.E. (Oxford University Press). 15s. od.

This regiment was originally raised by the Indian ruler of Poona in 1812 as the Poona Auxiliary Force, to be trained and commanded by British officers. After the battle of Kirkee in 1817 it was transformed into the 1st Battalion, 12th Native Infantry. Then after being styled first the 13th then the 23rd Regiment of Bombay Native Infantry, it became, in 1903, the 123rd Outram's Rifles, attaining its present designation in 1922. Between 1918 and 1922 there existed a unit named 3/153rd Rifles, which consisted of units and officers, chiefly of the 123rd. Outram's Rifles took part with distinction in most of the Indian campaigns, from Kirkee down to the Great War; in the latter the regiment fought in Egypt and Palestine from 1916 to the end.

This is a succinct and clearly written history of 200 pages; the maps are good; there are a number of (very short) appendixes and an index.

AIR

Jane's All the World's Aircraft of 1933. Twenty-third year of issue. Compiled and Edited by C. G. Grey and Leonard Bridgman. (Sampson Low, Marston & Co., Ltd.). £2 2s. od.

"All the World's Aircraft" stands alone and cannot be compared with any other publication. Everyone requiring a book of reference wherein he can find the details of flying machines and aero-engines; everyone whose business necessitates him keeping in touch with all phases of aviation, should possess a copy; there can be no equivocation on that point, nor is this statement any exaggeration. The present volume deals with the development of civil and military flying and the latest aeroplanes, aero-engines and airships of every country in the world.

This year, for example, there are 625 different aeroplanes described, these being made in 21 different countries. In the engine section 522 engines are dealt with—the products of 10 different countries. In both these sections only the aircraft actually in production at each manufactory are described. The descriptions are brief and for the most part in tabular form; but they are liberally interspersed with illustrations.

Students of this volume will find it a valuable index of the state of the world's aviation industry. The current volume, which describes the progress achieved during 1933, discloses the fact that the advance made with regard to commercial types of aircraft has, perhaps, been greater than that relating to military types. Speeds have gone up and several countries now habitually use machines cruising at over 150 m.p.h. In England we have been content with slower speeds; but a study of the weights and performances brings out the important fact that British aircraft constructors still produce the most profitable aeroplanes, that is, aeroplanes which carry the most pay-load per horse-power.

Bulgaria has entered the ranks of aircraft-constructing countries, for the first time, with two models, while France heads the list with 142, followed by Great Britain with 124 and America with 114. In the engine section America has 84, France 76 and Great Britain 67.

Both the U.S. Army and Navy have instituted secret and part-publication lists, so that this year, for the first time, it is not possible to read the performance figures of many of their latest Service types.

The historical section—service and civil—is of value in that it clearly shows the rapidity of the developments which have taken place, both in combatant and civilian aircraft, as well as the great expansion of the civilian air services during the past twelve months.

ADDITIONS TO THE LIBRARY

GENERAL

SAMUEL PEPYS: THE MAN IN THE MAKING. By Arthur Bryant. 10s. 6d. 8vo. (Cambridge University Press). Presented by the Publisher.

WAR MEMORIES OF DAVID LLOYD GEORGE. Vol. II. 21s. od. 8vo. (Ivor Nicholson & Watson).

ALARMS AND EXCURSIONS IN ARABIA. By Bertram Thomas. 15s. od. 8vo. (G. Allen & Unwin, Ltd.).

AUTHOR AND CURATOR. By The Hon. Sir John W. Fortescue. 7s. 6d. 8vo. (Wm. Blackwood & Sons, Ltd.).

SIR HENRY MORGAN. By W. Adolphe Roberts. 12s. 6d. 8vo. (Hamish Hamilton).

FIFTY YEARS OF EUROPE. By J. A. Spender. 21s. od. 8vo. (Cassell & Co.).

CAN WE LIMIT WAR? By Hoffman Nickerson. 8s. 6d. 8vo. (J. W. Arrowsmith, Ltd.). Presented by the Publisher.

PRELUDE TO HITLER. By B. J. Reynolds. 7s. 6d. 8vo. (Jonathan Cape). Presented by the Publisher.

LIGHTER EPISODES IN THE LIFE OF A PRISONER OF WAR. By Major T. V. Scudamore. 6s. od. 8vo. (Messrs. Gale & Polden). Presented by the Publishers.

A POLITICAL GEOGRAPHY OF THE BRITISH EMPIRE. By C. B. Fawcett. 18s. od. 8vo. (University of London Press).

DER ENGLISCHE DOLMETSCHER. By F. W. Nagel. 7s. od. 8vo. (Mittler & Sohn, Berlin).

INTIMATE DIARY OF THE PEACE CONFERENCE AND AFTER, 1918-1923. By Lord Riddell. 18s. od. 8vo. (V. Gollancz, Ltd.).

GRUNDZUGE DER WEHRPOLITIK. By K. L. Von Oertzen. Rm. 7. 8vo. (Hanseatische Verlagsanstalt, Hamburg.) Presented by the Publisher.

STORM CENTRES IN THE NEAR EAST, 1879-1929. By Sir Robert Windham Graves. 21s. od. 8vo. (Hutchinson & Co.).

KING CHARLES I. By Evan John. 10s. od. 8vo. (Arthur Barker, Ltd.).

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THE NEW GERMANY DESIRES WORK AND PEACE: Speeches by Reich Chancellor Adolf Hitler. 8vo. (Liebheit & Thiesen, Berlin). Presented by Lieut. G. H. C. Napier, R.A.

GERMANY ENTERS THE THIRD REICH. By C. B. Hoover. 8s. 6d. 8vo. (Macmillan & Co.).

A MANUAL OF FLAGS. By V. Wheeler-Holahan. 21s. od. 8vo. (F. Warne & Co., Ltd.).

SPIES BREAK THROUGH. By Lieut. A. Bauermeister. Translated by H. C. Bywater 7s. 6d. 8vo. (Constable & Co.). Presented by the Publisher.

NAVAL

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